
A FOUR-YEAR PLAN FOR CLIMATE ACTION
MAINE
WON'T WAIT
NOVEMBER 2024
MAINE CLIMATE COUNCIL

FROM THE GOVERNOR

To the People of Maine,

For generations, people who live in, and who visit, our state have shared a deep love and appreciation for the wilderness, the wildlife, and the weather that make this place so special. When people think of Maine, they think of warm, sunny days on beautiful sandy beaches with calm waves that their kids can safely swim in. They think of clean lakes and ponds for anglers to catch trout and for boaters to spend time on. They think of hiking on a cool fall morning in our western mountains or in the woods near their house. They think of skiing and snowshoeing through the first powder day of the season, the snow our surest sign that winter is here.

Like many people, I love spending time in the great outdoors with my family, and I don't want the Maine I love—that we love—to become just a memory. As we continue to burn fossil fuels, greenhouse gases are choking our planet, driving up temperatures, pushing sea levels higher, and making storms more frequent and severe. Maine people remember all too well the three devastating winter storms of December 2023 and January 2024 that took the lives of four people and inflicted more than $90 million in damage to public infrastructure alone, not to mention millions more in damage to private homes and business. Those storms flooded homes and businesses, washed away roads and wharves, and cut off access to major businesses, like ski resorts, during their peak season. As I write this, we face unseasonably warm days, and I wonder, not for the first time, what this winter will bring.

Shortly before I took office nearly six years ago, my youngest granddaughter was born. At the time, we were already seeing signs that Maine was running out of time to slow the impact of climate change, not only for my granddaughter's generation but for the generation living here, right now.

That's why, when I became governor, I promised people across Maine that we would take action to protect our state from the ravages of climate change. I promised that we would fight to preserve this special place we call home for the benefit of future generations, like my granddaughter. I promised that Maine would not wait. The first step we took was mobilizing experts on the Maine Climate Council, which created our state's first climate action plan, set ambitious goals to reduce greenhouse gas emissions, and put us on the path to tackling climate change head-on.

Four years later, I am proud to say that, thanks to Maine people, we have made remarkable progress towards embracing clean energy and reducing our carbon emissions, including:

- exceeding our goal of installing 100,000 heat pumps statewide and setting a new, more ambitious target of installing 275,000 heat pumps by 2027;
- reducing our dependence on heating oil from 70 percent of Maine households in 2010 to just over 50 percent in 2023, saving folks money on their heating bills;

- growing our clean energy economy to employ more than 15,000 people in rewarding, good-paying jobs, which is more than halfway toward our goal of 30,000 clean energy jobs by 2030;
- reducing our greenhouse gas emissions by 30 percent since 1990, achieving meaningful progress towards our goal of becoming carbon neutral by 2045;
- and investing tens of millions of dollars—the largest investment in state history—to make our infrastructure, homes, and businesses more resilient to the impact of climate change.

Like you, I am proud of this progress, but we know our work is far from done.

The perils of climate change will continue to confront us in the years to come, which is exactly why this updated climate action plan is so important. I will not always be the governor of this great state, but this revised climate plan lights the way forward for all future leaders who are committed to taking on climate change here in Maine. The timing of this updated report is also all the more critical during this moment of profound change for our nation.

While the election of a new president and a new Congress will likely put a temporary end to the federal government's work to fight climate change, it will not put an end to work in the states. As part of the powerful and bipartisan U.S. Climate Alliance, Maine will continue to work with 23 other states to advance climate action across the country, no matter who is in the White House.

Maine will also continue our vital work with people across our state—from farmers, foresters, and fishermen to parents and young people to lawmakers and local officials and tribal representatives—because we share a fundamental belief that climate change is real, that it is harming our lives, our health, our environment, and our economy right now, and that it will continue to pose a serious threat to our future.

This plan will serve as our playbook for the next steps we must take. It is this plan that will give us the resolve to protect Maine, through whatever storms and instability may come our way.

Together, with ingenuity and grit, with a commitment to one another and to all those who are to follow, we will continue to do all we can to fight climate change, to protect our people and our health, to strengthen our economy and create good-paying jobs, and—most importantly—to ensure that the Maine we love today remains the Maine that our children and grandchildren can love tomorrow.

Sincerely,

Janet T. Mills
Governor

TABLE OF CONTENTS

FROM THE CO-CHAIRS

Nearly one year ago, our state was battered by the first of three unprecedented winter storms that leveled widespread devastation and distress across inland and coastal Maine and revealed the depth of the climate crisis our communities, people, and economy will face in the years to come.

The storms of December 2023 and January 2024 caused more than $90 million in damage to public infrastructure alone, with millions more to private homes, businesses, and property. These storms were the latest, and most serious, in a series of climate-driven disasters to strike Maine; the repeated damage from these extreme storms, flooding, and storm surge tested the resolve of our ability to respond and rebuild.

As co-chairs of the Maine Climate Council, we were reminded of the warnings from leading scientists that advise the Council, who closely evaluate the cascading effects from Maine's climate becoming steadily warmer and wetter, and more extremes in our weather and our seasons. Beyond these storms delivering more powerful blows to our communities, infrastructure, and electrical grid, accelerating climate change is causing winter ice to retreat from lakes, growing seasons to be disrupted, sea levels to rise and ocean surges to swell, and health and safety risks to Maine people to increase in prevalence, including illness, high heat, and increasingly, shock, fear, and apprehension about how to face serious impacts yet to come.

These unprecedented challenges were the backdrop to the Council's work throughout this year, kicked off by the Governor with a special meeting in January, where we heard firsthand from affected communities. From that point, the Council and its working groups evaluated dozens of new strategies to update the state's climate action plan, *Maine Won't Wait*, for the next four years.

In addition to meeting the mandate to produce a plan that outlines steps to reduce greenhouse gas emissions, the Council's additional challenge was ensuring the strategies of this update to *Maine Won't Wait* also addressed the urgent need to strengthen Maine's climate resilience. Resilience is a theme that was incorporated into nearly every component of this updated plan.

We are proud of the Council's diligence and thoughtfulness to balance these important priorities to recommend clear, bold, common-sense strategies to further Maine's momentum to address the escalating effects of climate change, reduce greenhouse gas emissions, and ensure climate investments and opportunities are available equitably across our state. We also wish to thank the more than 1,000 Maine people who provided input into these strategies through our public survey, direct comments, and attending our public meetings across the state.

The environment in which the Council produced this plan is different than four years ago, when *Maine Won't Wait* was first released. Over the past four years, historic state and federal investments in climate priorities, especially through the Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA), have collectively delivered massive climate and clean energy opportunities for Maine communities, businesses, and consumers.

Here in Maine, BIL and IRA have delivered hundreds of millions of dollars for more resilient infrastructure projects, including a $69 million federal climate resilience grant which will support resilience infrastructure projects across the state, establish a new office within state government to lead resilience planning, and

provide direct support to Maine's communities. Additionally, some of the nation's first electric vehicle chargers funded by BIL opened in Maine, and the IRA is supporting Maine homeowners, businesses, nonprofits, and communities to make important investments to reduce emissions, improve efficiency, and save money.

Over 225 communities in Maine are now participating in the Community Resilience Partnership, a program recommended by *Maine Won't Wait* to give towns, cities, and tribal governments funding for local climate priorities. With an additional $5 million investment from Governor Mills and the Legislature, plus new federal funding, the program is recruiting more communities to participate every month.

Just as inspiring is the commitment from young people in Maine to understand and engage in climate action. This year, we were proud to launch a new initiative, Climate&Me, to offer information and inspiration for young Mainers about climate change. These young people will usher climate action into the next generation, capitalizing on opportunities to protect our environment while strengthening our economy, as they pursue well-paying careers in the climate and clean energy fields. As part of the Climate&ME Youth Climate Art Challenge, this iteration of the climate plan includes art produced by Maine students.

Lastly, this plan continues to place Maine in the vanguard of states on climate action. Our success in the adoption of heat pumps has become a model for the rest of the country and inspired a new multi-state initiative in New England. With continued support, Maine will bring high-efficiency heating and cooling within reach of more people, especially lower-income homeowners, residents of mobile homes, and renters.

With much progress to celebrate from the past four years, it could be easy to underestimate the challenges ahead. The storms of last winter served as a wake-up call. Even with our bold steps forward, the threat of climate change is real, present, and accelerating.

Under the banner of *Maine Won't Wait*, and with the leadership of Governor Janet Mills, our state has become recognized as a national leader in common sense climate action. So much good work has been done since we launched this plan in 2020, and much of this progress was because of the continued partnerships with Maine people and community leaders. From visionary town managers to inspired young climate activists to leading businesses to proactive homeowners, the state's climate progress is built on the thousands of actions happening all across Maine.

Continued action is needed to do our part to stem the impacts of climate change and better prepare our communities for the changes we know are coming. This updated plan advances the work begun by the Council four years ago and continues the commitment to ensuring that the benefits of climate investments reach all Maine people. On behalf of the Maine Climate Council, we are proud to deliver this comprehensive update to *Maine Won't Wait* and remain grateful for your continued partnership in this important work.

Regards,

Hannah Pingree, Director
Governor's Office of Policy Innovation and the Future

Melanie Loyzim, Commissioner
Department of Environmental Protection

EXECUTIVE SUMMARY

On June 26, 2019, Governor Janet Mills and the Legislature created the Maine Climate Council, an assembly of scientists, industry leaders, bipartisan local and state officials, and engaged citizens to develop a four-year plan to address the impacts of climate change on Maine, build resiliency to climate effects, and meet state statutory targets to reduce greenhouse gas emissions.

On December 1, 2020, Governor Mills welcomed the release of *Maine Won't Wait*, the first four-year climate-action plan from the Maine Climate Council. Backed by the most comprehensive scientific and economic assessments about the effects of climate change in Maine in a decade, *Maine Won't Wait* called for decisive steps to reduce carbon emissions and ensure our economy and communities are better prepared for the increasing impacts of climate change.

This update to *Maine Won't Wait* advances the work begun by the Council four years ago and adds new strategies for the next four years.

UPDATING MAINE WON'T WAIT FOR THE NEXT FOUR YEARS

Since the Maine Climate Council first released *Maine Won't Wait* in 2020, its 39 members have convened regularly to weigh evolving science, track the state's progress toward its ambitious climate goals, and consider the impact of local, national, and global events and trends on Maine's climate action plan. The input of 10 working groups, subcommittees, and task forces formally assembled to advise the Council as well as more than 1,000 members of the public informed that work and shaped the strategies in this updated plan.

Six working groups comprised of more than 200 people focus on key areas for climate action, as directed by statute:

- Transportation
- Buildings, Infrastructure, and Housing
- Coastal and Marine
- Energy
- Natural and Working Lands
- Community Resilience

Two subcommittees ground the Council's work across all areas:

- **Scientific and Technical Subcommittee**, which as directed by statute identifies, monitors, studies, and reports out findings and recommendations related to climate change and its effects in Maine.
- **Equity Subcommittee**, which the Council established following the release of *Maine Won't Wait* in 2020 to support ongoing planning and implementation of the state's climate strategies to ensure shared benefits across diverse populations.

Two task forces also provided recommendations to the Council for consideration in the 2024 update:

- **Materials Management**, to identify opportunities to reduce greenhouse gas emissions through solid waste reduction and prevention, recycling and composting, and recovering energy from certain materials.
- **Land Use**, to explore proactive growth management while meeting the state's climate goals.

Just over a year ago, in September 2023, the Council embarked on a comprehensive process to gather public feedback, aiming to steep its work in the perspectives of everyday Maine people. Individuals and organizations contributed their thoughts and questions virtually and in person, including more than 1,000 people who responded to online surveys and more than 350 people who attended seven public meetings and other local events throughout the state.

This updated report to the Governor, Legislature, and people of Maine will now serve as a roadmap to advance Maine toward its climate goals for the next four years.

MAINE WON'T WAIT PLAN GOALS

Reduce Maine's Greenhouse Gas Emissions

While Maine has made meaningful progress in reducing greenhouse gas emissions, we must reduce these emissions at a faster pace to ensure that we meet the state's 2030 and 2050 targets and do our part to limit global warming to 1.5 degrees Celsius this century.

Strengthen Resilience to Climate Impacts

Maine must take action to ensure that our people, environment, economy, and society are more resilient to the impacts of climate change that are now occurring. While mitigating the causes of climate change and better preparing Maine for its impacts requires significant public and private investment, inaction will cost Maine substantially more, and those costs will accelerate over time.

Create Jobs and Economic Prosperity

Many of the strategies in this climate action plan will grow the economy, protect key economic sectors most at risk from climate change, and foster innovation in new business sectors that will drive climate solutions.

Bring Climate Action to All Maine People

Some Maine people and communities experience climate-change impacts more acutely than others, including rural, older, and lower-income residents, as well as people and places with economies tied to natural resources. As we move forward from climate-action planning to implementation, this plan outlines new and updated strategies and targets to ensure that the benefits of climate investments reach all Maine people.

STRATEGY A

Embrace the Future of Transportation in Maine

Transportation is responsible for 49 percent of Maine's carbon emissions from fossil fuels, making the sector one of Maine's largest opportunities to combat climate change. Most of those emissions come from the tailpipes of passenger cars and trucks as many drivers travel long distances across our large, rural state. Continued progress will depend on faster adoption of cleaner electric vehicles and plug-in hybrids, improved public and active transportation options, and better land use planning for new development that help Mainers avoid or reduce driving.

1

Accelerate Maine's transition to light-duty electric and plug-in hybrid electric vehicles

2

Accelerate Maine's adoption of zero-emission medium- and heavy-duty vehicles (MHDVs)

3

Invest in public, active, and shared transportation

4

Improve the resilience of Maine's transportation system

STRATEGY B

Modernize Maine's Buildings: Energy Efficient, Smart, and Cost-Effective Homes and Businesses

After transportation, Maine's building sector holds the most potential for achieving the state's emission-reduction goals. Heating and cooling of residential and commercial buildings contribute 31 percent of Maine's greenhouse gas emissions from fossil fuel combustion. Lowering these emissions and reducing energy costs will require modernizing our buildings to use cleaner energy, increasing energy efficiency, improving building resilience against climate impacts like heatwaves and extreme storms, and encouraging the use of more sustainable building materials.

1

Advance progress making homes and businesses more energy efficient by investing in weatherization and heating systems

2

Build and renovate more housing that is affordable, energy efficient, and close to vibrant community centers

3

Establish strong systems to support rapid adoption of and compliance with increasingly climate-friendly building codes and standards

4

Promote the manufacture and use of climate-friendly building products

5

Accelerate cleaner technologies in industrial processes

6

Continue to lead by example in publicly funded buildings

STRATEGY C

Transition to Clean Energy

Maine has become a national leader in reducing greenhouse gas emissions from its energy sources by setting ambitious requirements for transitioning to renewable sources. In 2019, Governor Mills signed bipartisan legislation that set a requirement for Maine to use 80 percent renewable energy by 2030. In 2023, Maine crossed the threshold of using more than 50 percent of its electricity from renewable sources. Recognizing the progress made to date and the key role of clean energy in bringing down the cost of electricity for Maine people, protecting our environment from harmful carbon emissions, and creating good-paying jobs, Governor Mills announced a new accelerated goal of 100 percent clean energy by 2040.

Maine can achieve its clean energy and climate goals while reducing energy burdens for Maine people through thoughtful planning and build-out of clean energy infrastructure. We have the technology to increase efficiency and reduce the costs of resilient energy infrastructure through innovative "demand management" strategies. And we can continue to build a clean energy workforce that offers local, good-paying jobs.

1. **Decrease energy burdens while transitioning to clean energy**

2. **Plan and build the infrastructure to achieve a resilient and 100 percent clean electricity grid by 2040**

3. **Manage the impact of buildings, vehicles, and industry on the grid with innovative demand-management and load-flexibility strategies**

4. **Grow Maine's clean energy economy to support 30,000 clean energy jobs by 2030**

STRATEGY D

Create Jobs and Grow Maine's Economy through Climate Action

Climate change is threatening the natural resources that underpin Maine's economy and the livelihoods that depend on them. At the same time, new opportunities are arising in Maine's response to climate change. Rich oceans, abundant forests, and productive farmlands position Maine's heritage industries to lead in trillion-dollar markets for global climate solutions. Making businesses more climate friendly can save on both operating costs and emissions. Growth in the state's clean energy and energy efficiency sector requires a skilled workforce, creating thousands of well-paying jobs that are already helping Maine families thrive.

Transformative workforce investments through the Maine Jobs and Recovery Plan are helping to build an economy poised for prosperity, including major efforts to draw young people into quality careers. Over the next four years, Maine must sustain and build on these investments. This means focusing on drawing more Mainers into quality climate careers and then helping those individuals build their skills to deliver on, and benefit from, a Maine economy that embraces the opportunities in climate action.

1

Innovate with natural resources and clean technologies that help reduce emissions and increase resilience to climate impacts

2

Help Maine businesses and natural resource industries succeed in the global climate and clean energy economy

3

Strengthen and grow Maine's climate-ready workforce

STRATEGY E

Protect the Environment and Natural and Working Lands and Waters in Maine

Maine's abundant forests, rugged coastlines, and local farms depend on vibrant natural ecosystems. These natural and working lands and waters that embody our state's character are simultaneously threatened by climate change and, through their ability to store carbon, act as one of our most powerful tools to fight it. Beyond storing carbon, these lands and waters provide clean drinking water and sustain wildlife habitat and ecosystems. The farming, fishing, forestry, tourism, and outdoor recreation industries that rely on these ecosystems benefit the health of our people and economy. As the climate changes, Maine's approach to natural and working lands and waters should emphasize restoration as well as protection, to reduce harm from climate impacts and sustain ecosystems for generations to come.

1. **Increase the total acreage of conserved natural and working lands in the state to 30 percent by 2030**

2. **Develop new incentives to increase forest carbon storage**

3. **Increase the amount of food consumed in Maine from state food producers to 30 percent by 2030**

4. **Reduce food loss and waste by 50 percent by 2030**

5. **Support farming, forestry, and fisheries industries in Maine in adapting to climate change**

6. **Better monitor inland and coastal and marine ecosystems to increase resilience**

7. **Reduce and capture methane emissions from Maine's waste sector**

STRATEGY F

Build Healthy and Resilient Communities

The past two years have thrown into sharp relief the impact of climate-driven weather events in Maine communities. Persistent warming trends on land and at sea are generating more frequent and damaging storms, rising seas, flooding, and drought, all of which threaten the lives of Maine's people, their livelihoods in Maine's heritage industries, and our economy and environment. These events further drive home the danger posed by climate change and the urgent need to plan for and invest in climate resilience at the state, regional, and local levels. Maine communities continue to need funding, tools, and support to tackle these climate impacts as they balance the interconnected local challenges of aging infrastructure, the need for more affordable housing, public health impacts, and more.

1. **Increase local capacity for climate resilience**
2. **Improve Maine's preparation for and recovery from natural disasters**
3. **Expand access to funding and financing for climate adaptation**
4. **Help Maine people prepare their homes, schools, and businesses for climate change**
5. **Protect critical working waterfront infrastructure**
6. **Strengthen public health monitoring, education, and prevention**
7. **Increase awareness and action on the mental health impacts of climate change**
8. **Promote and incentivize land use strategies that help communities avoid future transportation emissions, conserve natural and working lands, create affordable housing, and meet the state's clean energy goals**
9. **Reduce waste and emissions from products that Maine people buy and use**

STRATEGY G

Engage With Maine People on Climate Action

The success of *Maine Won't Wait* relies on the support of Maine people. As climate actions become more urgent, we must improve communication and engagement — especially with populations who have greater challenges accessing information and programs. With unprecedented federal funding available for climate action, the state must act to ensure communities and people aren't left out of these time-limited opportunities.

1

Increase engagement with under-served Maine people and communities

2

Broaden climate and energy education and outreach to individuals, businesses, local governments, and nonprofit organizations

3

Continue to engage with Maine youth to support climate action

4

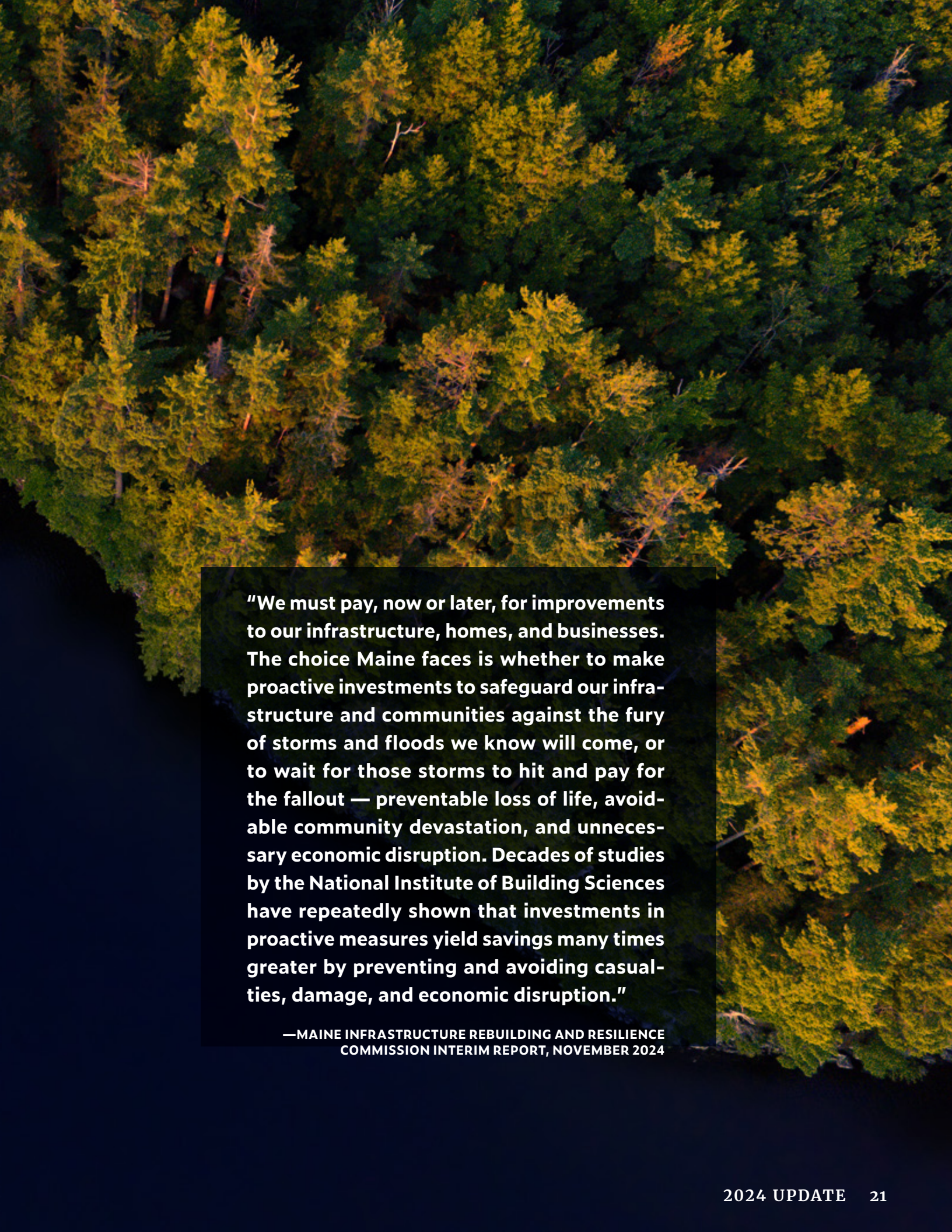
Increase education related to climate change, clean energy, and related careers in PreK–12 schools and higher education

IMPLEMENTING THE PLAN

Since the release of the state's four-year climate action plan *Maine Won't Wait* in 2020, Maine has become recognized as a leader in common sense climate action. Record installations of high-efficiency heat pumps, continued progress on efficiency and weatherization, and the steady increase of electric vehicle purchases and public charging stations, among other advances, directly address our state's leading causes of greenhouse gas emissions and start us on a path to achieve the ambitious goals in the plan. Maine is on track to meet its goal of using 80 percent renewable sources for our electricity by 2030, and the Mills Administration is developing a pathway to reach 100 percent clean energy by 2040.

Maine's response to climate change has been thoughtful, ambitious, and effective in many ways, yet the hardest work still lies ahead given the scale of the challenge. Relentless land and sea warming trends are driving extreme storms, rising seas, flooding, and drought, all of which threaten our state's environment, heritage, and future. In a span of just four weeks during December 2023 and January 2024, three historically severe storms caused catastrophic inland and coastal flooding, resulting in unprecedented devastation to infrastructure and communities across the state. The damage to public infrastructure alone reached at least $90 million, with millions more in losses for private homes and businesses.

Following these storms, Governor Mills established the Infrastructure Rebuilding and Resilience Commission (IRRC) to identify near-term rebuilding and resilience priorities and deliver a long-term resilience plan for Maine in May 2025. The IRRC's preliminary recommendations, delivered in November 2024, focus on both the near-term approaches to strengthening resilience in Maine and the long-term commitments that will be required to confront a changing climate.



"We must pay, now or later, for improvements to our infrastructure, homes, and businesses. The choice Maine faces is whether to make proactive investments to safeguard our infrastructure and communities against the fury of storms and floods we know will come, or to wait for those storms to hit and pay for the fallout — preventable loss of life, avoidable community devastation, and unnecessary economic disruption. Decades of studies by the National Institute of Building Sciences have repeatedly shown that investments in proactive measures yield savings many times greater by preventing and avoiding casualties, damage, and economic disruption."

—MAINE INFRASTRUCTURE REBUILDING AND RESILIENCE COMMISSION INTERIM REPORT, NOVEMBER 2024

UNPRECEDENTED FUNDING

In the last several years, federal legislation has created unprecedented funding opportunities to achieve the goals in *Maine Won't Wait*.

Nearly $1 billion in federal American Rescue Plan funds, invested through Governor Mills' Maine Jobs and Recovery Plan, are improving the lives of Maine people and families, helping businesses, creating good-paying jobs, and building an economy poised for future prosperity. The Jobs Plan includes significant investments in broadband, transportation, resilience, energy efficiency, and Maine's heritage industries, consistent with recommendations of *Maine Won't Wait*.

On November 15, 2021, President Biden signed into law the historic Infrastructure Investment and Jobs Act (IIJA), which has subsequently been referred to as the Bipartisan Infrastructure Law (BIL). Maine is pursuing significant funding opportunities that align with state goals. Since the law passed, over $3.7 billion from BIL has been awarded to hundreds of projects in Maine including transportation, broadband, resilience, and energy investments.

The federal Inflation Reduction Act (IRA) passed in 2022 included $370 billion for climate and energy spending with the aim of reducing U.S. greenhouse gas emissions by 40 percent by 2030. The IRA has been touted as the most significant federal climate law, and it will deliver transformational climate and clean energy programs and opportunities for Maine businesses, consumers, and communities, through significant support for tax incentives, funding, innovation opportunities, financing, jobs, and more. Additionally, there are significant job growth opportunities in Maine based on IRA investments.

Moving with urgency to take bold, specific actions to achieve Maine's climate goals will require extensive resources, and no single funding stream will suffice. With federal funding likely to decrease from the significant investments of the last several years, at least in the short term, Maine needs to leverage a variety of sources—existing and new, private and public, local, state, and federal—and innovative financing mechanisms to support transformation.

Maine needs to leverage new financing tools for both clean energy and energy efficiency as well as climate adaptation and infrastructure resilience projects. The Maine Climate Council recommends that the state develop a long-term funding plan and investment strategy to support implementation of *Maine Won't Wait* goals, including the financial tools needed to make sure all Maine people have access to clean energy and energy efficiency improvements. The State should explore how to structure programs and products to attract private investment, consider the opportunity for other finance structures to provide long-term capital support for both climate resilience and energy programs, and leverage the significant federal funding that is currently available, such as the Greenhouse Gas Reduction Fund (GGRF), a $27 billion national investment created by the IRA to expand financing for energy efficiency and carbon-reduction projects.

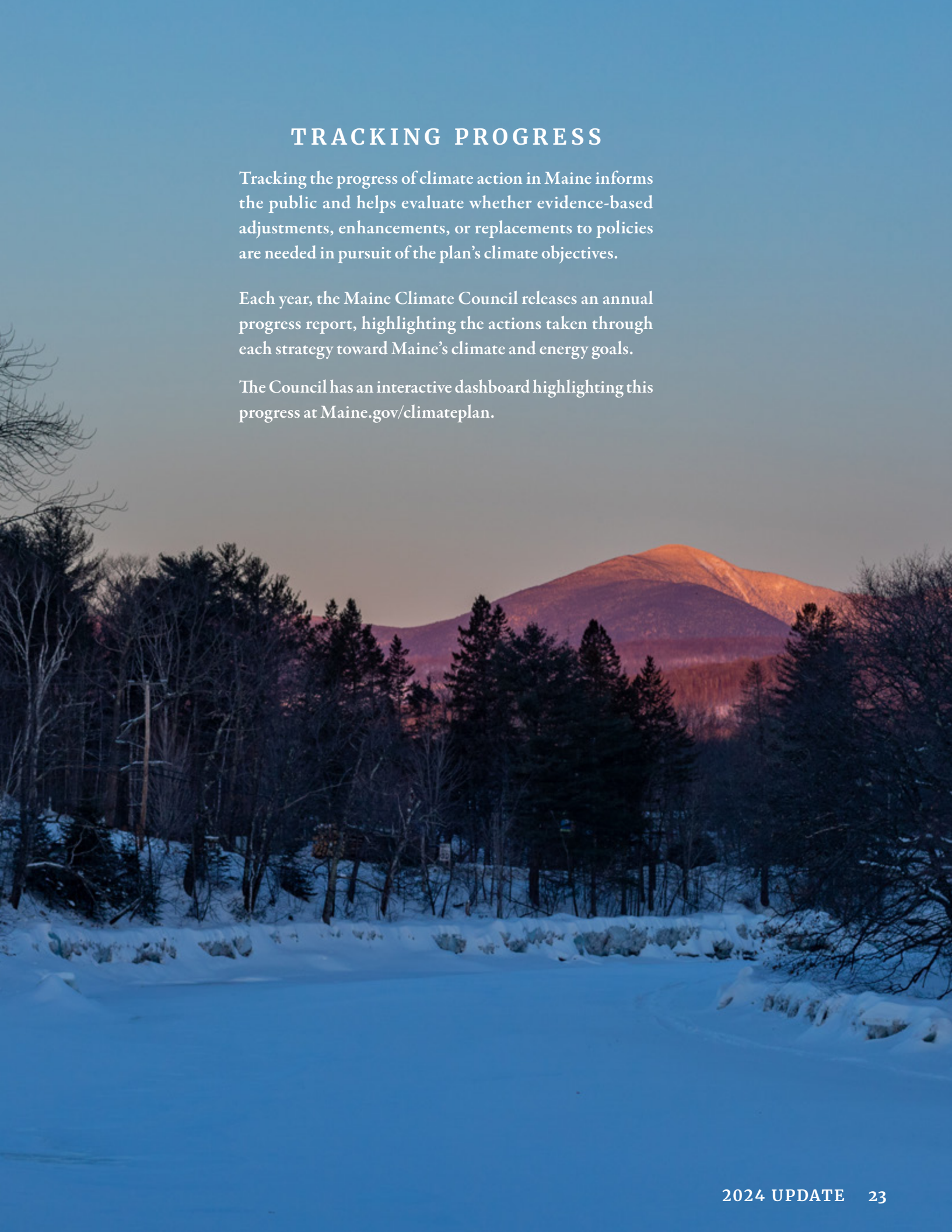
Maine should continue to strengthen partnerships with philanthropy and other private sector partners to achieve climate goals.

TRACKING PROGRESS

Tracking the progress of climate action in Maine informs the public and helps evaluate whether evidence-based adjustments, enhancements, or replacements to policies are needed in pursuit of the plan's climate objectives.

Each year, the Maine Climate Council releases an annual progress report, highlighting the actions taken through each strategy toward Maine's climate and energy goals.

The Council has an interactive dashboard highlighting this progress at Maine.gov/climateplan.



THE EFFECTS OF CLIMATE CHANGE ON MAINE

Since 2020, the Maine Climate Council's Scientific and Technical Subcommittee (STS) has provided the Council with the best available science on climate impacts in Maine to help its members make evidence-based decisions. The STS is made up of leading scientists with a broad array of expertise on climate change globally and in Maine. In 2020, the STS released its initial comprehensive report, *Scientific Assessment of Climate Change and Its Effects in Maine*, followed by an update to the scientific assessment in June 2024 which informed the development of the 2024 update to *Maine Won't Wait*.

The latest scientific assessment affirms that Maine's climate continues to change in part because of human activity, and that Maine people are already feeling the impacts of extreme storms, hotter summers, shorter winters, and higher seas, all of which threaten ecosystems and human health. It also tells us that Mainers experience climate change differently depending on where they live and the financial and community resources they have to prepare for and adapt to climate impacts. As a 2020 Maine Climate Council report, *The Cost of Doing Nothing*, documented, Maine and its people face economic, ecosystem, and public health impacts if the state does not take action to prevent and prepare for climate change.

Across the state, Maine is getting warmer and wetter and experiencing more extremes, from hourly and daily weather to monthly and seasonal climate. Droughts, while not increasing in frequency, will continue to become more intense, and wet periods will continue to become wetter. Maine now has more days with heavy rain, which can increase flood risk.

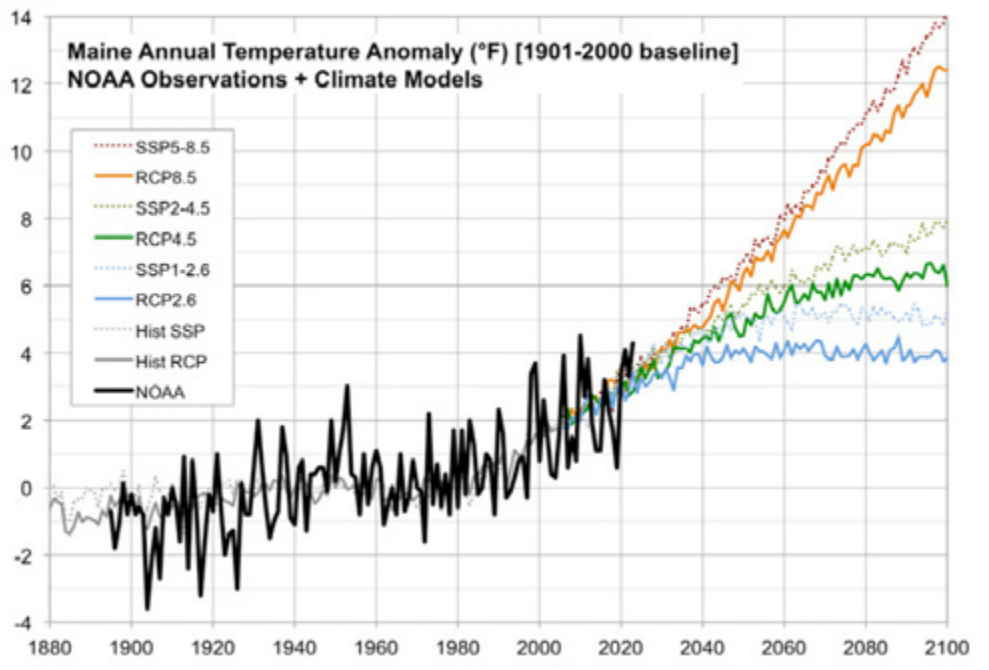


Figure 1: Maine annual temperature departure (anomaly) from 1901–2000 mean climatology observed 1895–2023 (black line) and projected to 2100 (colored lines; gray lines are historical runs) for a spread of future greenhouse gas emission scenarios. The projections include multi-model ensemble means derived from comparable CMIP5-based Representative Concentration Pathways (RCP) and CMIP6-based Shared Socioeconomic Pathways (SSP) future scenarios. Observations from NCEI (2024a). Model outputs for CMIP5 and CMIP6 from KNMI (2024)

Summers are becoming longer, stretching the growing season to start earlier and last later into the fall. Weather variability is reducing crop yields, costing farms and harming the mental and physical health of farmworkers. Maine has over 7,600 farms, 96 percent of which are family farms, on 1.3 million acres. The industry generates $3.6 billion and 27,000 jobs annually. Producers report concern about reduced crop yields and quality, poor crop and cover crop germination, and increased labor needs associated with irrigation.

By 2085, central Maine's climate could resemble current conditions in New Jersey, hundreds of miles south. Winter is two weeks shorter and is the fastest warming season, 5°Fahrenheit warmer than a century ago. Under the worst emissions scenario evaluated, only 15 percent of ski areas in the northeastern U.S. may be viable by the end of the century.

Maine is predicted to see an increase in heat illness with climate change. Data from emergency room visits in Maine show that heat illnesses are more likely to affect men and people who work outside or in hot environments. High temperatures also mean that ticks and mosquitoes can survive further north. As a result, incidence of Lyme disease is increasing in the state, along with new types of ticks such as those that can cause red meat allergy. Maine may also see more outbreaks of deadly viruses that mosquitoes carry, such as eastern equine encephalitis virus and Jamestown Canyon virus.

On the coast, sea levels have climbed almost 8 inches from a century ago and are accelerating, now twice as fast. Maine set record-high sea levels for most of 2023 and the start of 2024, with sea-level rise driving the January 2024 storms to break records. While catastrophic tropical storm surges are unlikely for Maine, severe flooding from winter storms, where tides and surge combine with higher sea levels, presents increasing risks. Coastal flooding has occurred about three times more often in Portland since 2010 compared to the past century, and high-tide flooding will increase over the next decade. Maine's "commit to manage" sea-level rise targets (1.5 feet by 2050 and 4 feet by 2100) with a high probability of occurring remain unchanged from the 2020 STS report. The timing of the "prepare to manage" targets (3 feet by 2050 and 8.8 feet by 2100) with a lower probability of happening but with far greater impacts remain the same in magnitude but will be reached approximately two decades later than previously reported in 2020. The STS also advises that the state plan for sea-level rise continuing and accelerating beyond 2100 and should consider planning out to 2150.

The Gulf of Maine, which includes all of the waters off of Maine's coast, is warming faster than 97 percent of the world's oceans, affecting iconic species such as Atlantic cod, North Atlantic right whales, and Atlantic puffins. Under the highest emissions scenario, the Gulf of Maine will experience ocean acidification conditions that are unfavorable for shell growth by 2050.

In Maine's forests, tree lines and the growing season are shifting; peak fall foliage is now occurring almost two weeks later than in 1950. As new tree species arrive, sensitive species like cedar and fir will likely suffer. Warming winters and increased frequency of winter freeze-thaw cycles are disrupting forest management and harvesting, with the highest vulnerability in the rural northern and western parts of the state. The Maine forestry sector is a heritage industry worth $8 billion per year and supports over 17,000 direct jobs. While large-scale wildfires are unlikely in the near future, models show the risk of wildfire doubling for the state. Many Maine homes are in or next to forests, putting them in the path of potential wildfires, with even wider consequences for air quality. Maine forests are critical to capturing and storing carbon and are the dominant carbon sink in Maine natural ecosystems, absorbing more carbon dioxide from the atmosphere than they release.

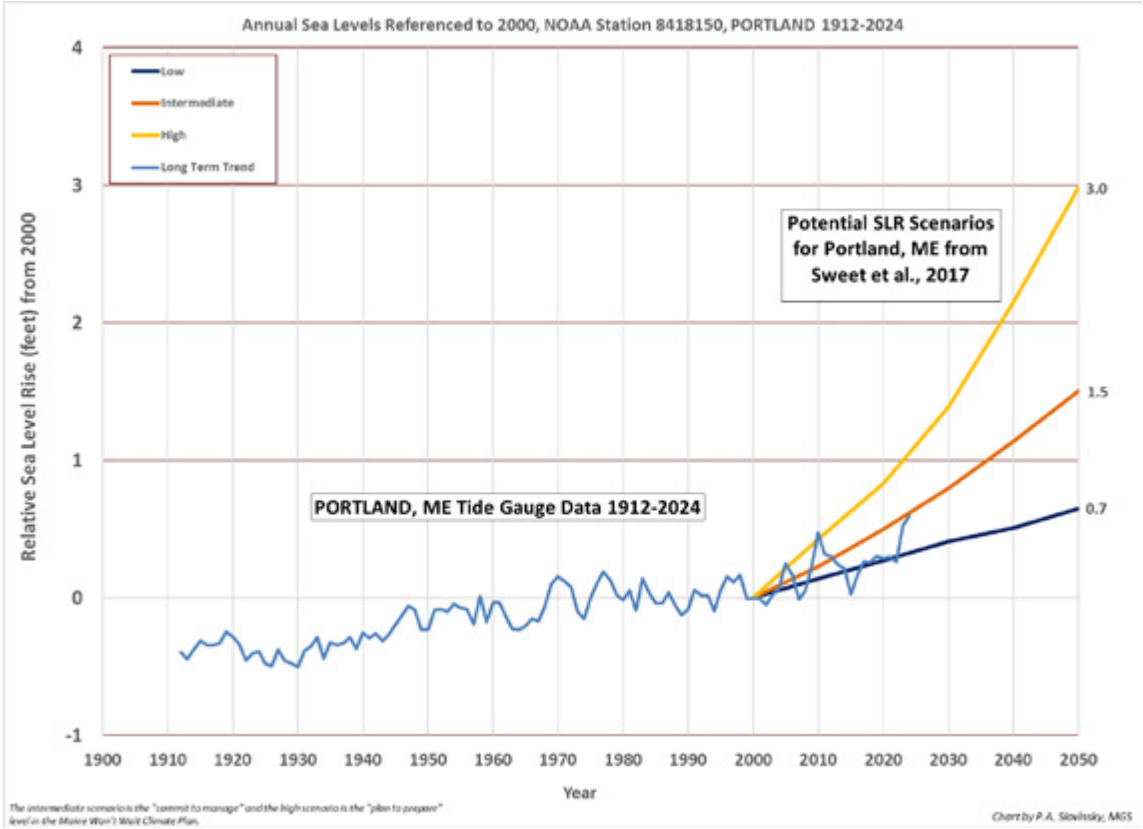


Figure 2: Historical trends in Maine's sea levels based on Portland tide-gauge data and projections of potential future sea-level rise scenarios.

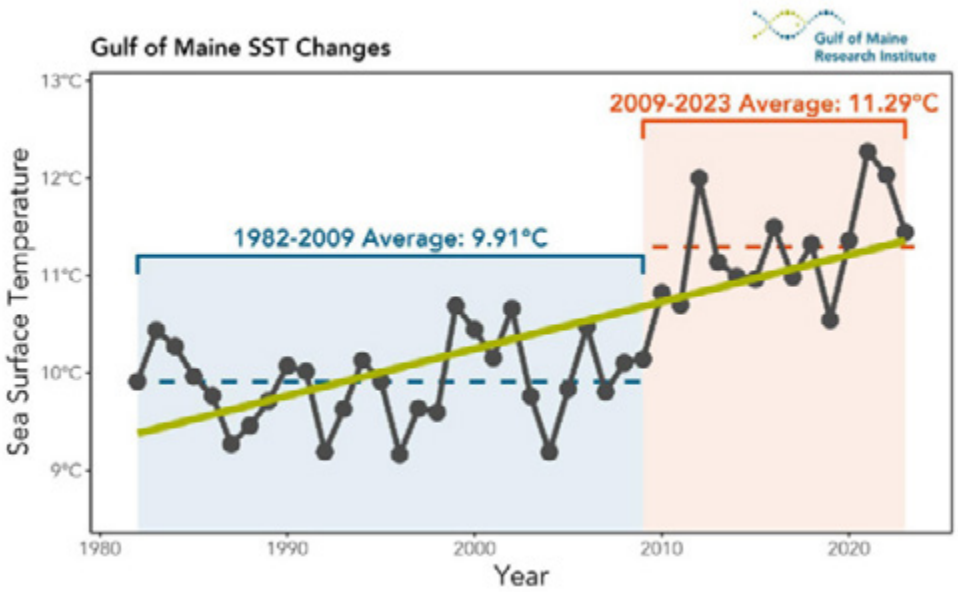


Figure 3: Gulf of Maine Sea Surface Temperature Changes Source: Gulf of Maine Research Institute

All eight of Maine's newly listed endangered species are threatened in whole or in part by climate change. Climate change is also causing localized extinctions of some species, often driven by increases in annual high temperatures. Climate warming is expected to facilitate the spread of more invasive species in the Northeast, and Maine's streams, river shores, and floodplains are particularly vulnerable. Intense flooding and increased temperatures will impact fish species such as brook trout and Atlantic salmon.

As our environment and wildlife strive to adapt to these changes, so too do our people and economy. Maine homeowners saw the second largest home-insurance rate increase in the country in 2024 as a result of damaging storms. Maine's municipal planners and harvesters, such as farmers, fishermen, and foresters, will need new strategies and support to cope with weather and seasonal variability, such as the potential for both drought and flood. Mainers especially vulnerable to climate change include rural, older, and low-income residents, and those economically dependent on natural resources, especially if tied to a single resource, such as lobster. Maine's lobster harvest in 2022 declined by 26 percent in volume from its historic highs in 2016. The Maine lobster industry provided 18,000 jobs and $464 million in revenue in 2023. Lobsters are being directly impacted by warming waters as well as climate-driven changes to the zooplankton community, effects that have important implications for the future of Maine's lobster industry

Exposure to impacts such as storms and floods can cause or worsen anxiety, depression, and post-traumatic stress disorder, and populations particularly at risk for mental-health impacts include children, teens, women, and Indigenous peoples. Finally, climate change impacts tourism, an $8.6 billion industry in Maine that supports over 150,000 jobs.

Understanding the effects of climate change on Maine is only part of the solution. We also must have a vision of future success and have the capacity to take actions to achieve that future. The science of hope suggests that having a personally meaningful goal, the knowledge and determination to achieve that goal, and a plan and a willingness to adjust it sets us on a path towards action. This actionable approach reduces anxiety, fosters well-being, and moves us closer to our climate goals. An accessible roadmap, like *Maine Won't Wait*, is a key strategy for nurturing hope.

MAINE WON'T WAIT GOALS

Reduce Greenhouse Gas Emissions

The consensus of climate scientists worldwide is that the world is facing unprecedented challenges associated with climate change as a result of human activities — primarily the combustion of fossil fuels that emit carbon dioxide and other greenhouse gases.

Globally, most indicators of a changing climate are accelerating, including the frequency and variability of extreme weather events and record-high temperatures. In Maine, our climate is getting warmer and wetter, and our winters are shortening. The Gulf of Maine is warming faster than 97 percent of the world's oceans. In just the last year, extreme weather has caused tens of millions of dollars in damage to homes, businesses, and community infrastructure, and put people's lives and livelihoods at risk. Maine people and communities are straining to prepare for and respond to the reality of damages of this magnitude.

The World Meteorological Organization reported that 2023 was the warmest year on record, with temperatures 1.45 degrees Celsius (with a margin of uncertainly of±0.12 degrees Celsius) above pre-industrial (1850-1900) levels. This is just shy of the often-discussed long-term threshold of 1.5 degrees Celsius warming as a critical metric for the planet. The Intergovernmental Panel on Climate Change (IPCC) has determined that the risks from climate change to people, species, and natural systems are much higher if global warming reaches 2.0 degrees Celsius than if warming is limited to 1.5 degrees Celsius or less. To accomplish this, the IPCC has found that the world needs to reach net zero carbon dioxide emissions, meaning that emissions sources are balanced by carbon storage by ecosystems and other processes, and greatly reduce other greenhouse gas emissions by 2050. Despite the focus on limiting warming to 1.5 degrees Celsius, every fraction of each degree of warming that is avoided matters. Taking the right actions now could result in transformational change essential for a sustainable, equitable world.

In 2019, Governor Janet Mills signed legislation requiring Maine to reduce greenhouse gas emissions by 45 percent by 2030 and by at least 80 percent by 2050. She also established the Maine Climate Council to develop and update the state's Climate Action Plan every four years to provide a roadmap to accomplish these targets. In 2022, Governor Mills signed into law a state goal to achieve carbon neutrality by 2045. And in 2023 she set an ambitious new target of 100 percent clean electricity by 2040.

Maine has achieved meaningful progress, already reducing emissions by 30 percent, well towards the 2030 goal. But we must reduce greenhouse gas emissions at a faster pace to ensure we reach these goals and do our part to limit global warming to 1.5 degrees Celsius this century. Recent data show atmospheric carbon dioxide concentrations still rising in 2023, with December 2023 at 421.86 parts per million (ppm) compared to 418.99 ppm in December 2022 and significantly higher than pre-industrial concentrations of atmospheric carbon dioxide of approximately 280 ppm.

The 10th Biennial Report on Progress Toward Greenhouse Gas Reduction Goals (2024) from the Maine Department of Environmental Protection (DEP) provides a comprehensive analysis of Maine's greenhouse gas emissions by fuel source and economic sector. The report found that as of 2021, Maine has reduced annual emissions from a high of 37.1 million metric tons of CO2 equivalents (MMTCO2e) in 2002 to 21.9 MMTCO2e in 2021 (a reduction of 41 percent from 2002 levels, or 30 percent from 1990 levels). Still, significant progress remains to meet the state's 2030 and 2050 targets.

In 2021, most of Maine's greenhouse gas emissions from fossil fuel combustion came from transportation, followed by residential and commercial buildings and operations, then industrial sources, and lastly from electricity generation and international bunker

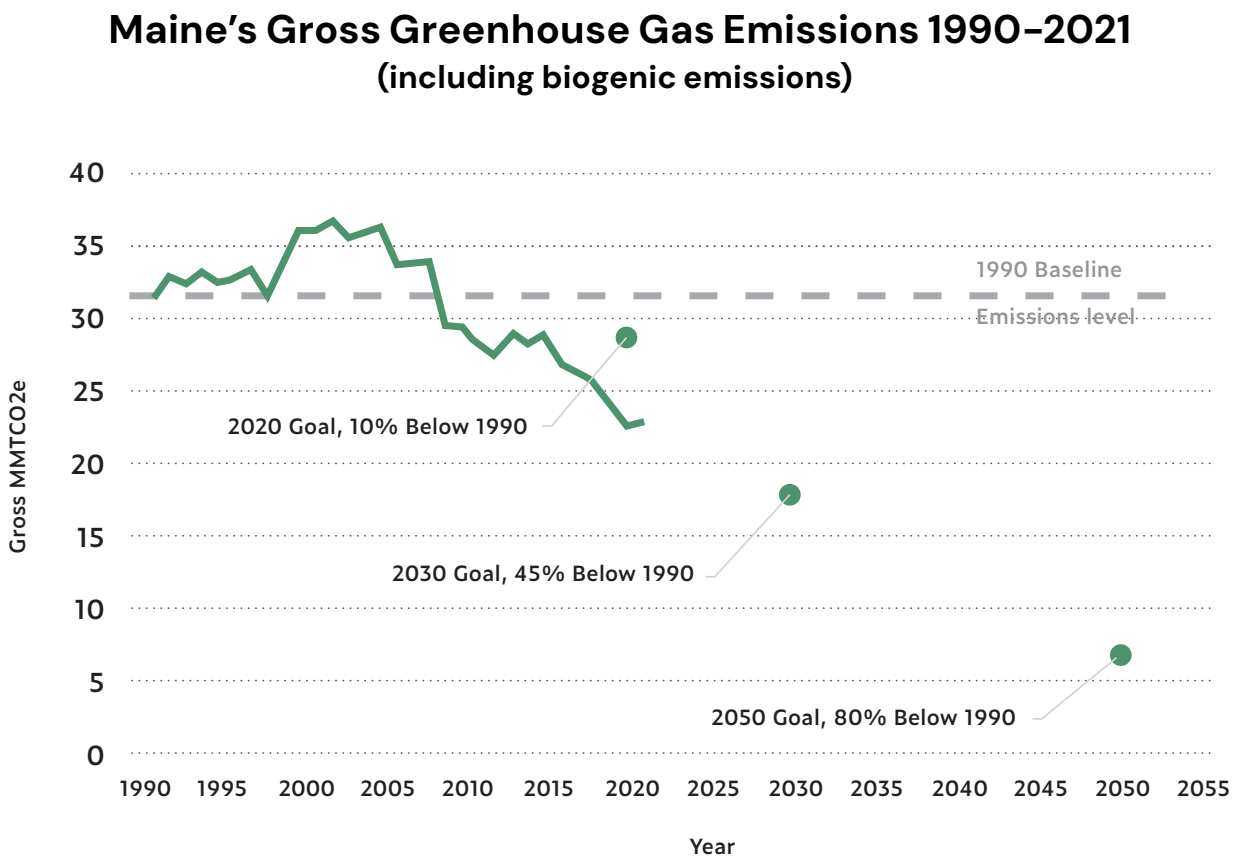


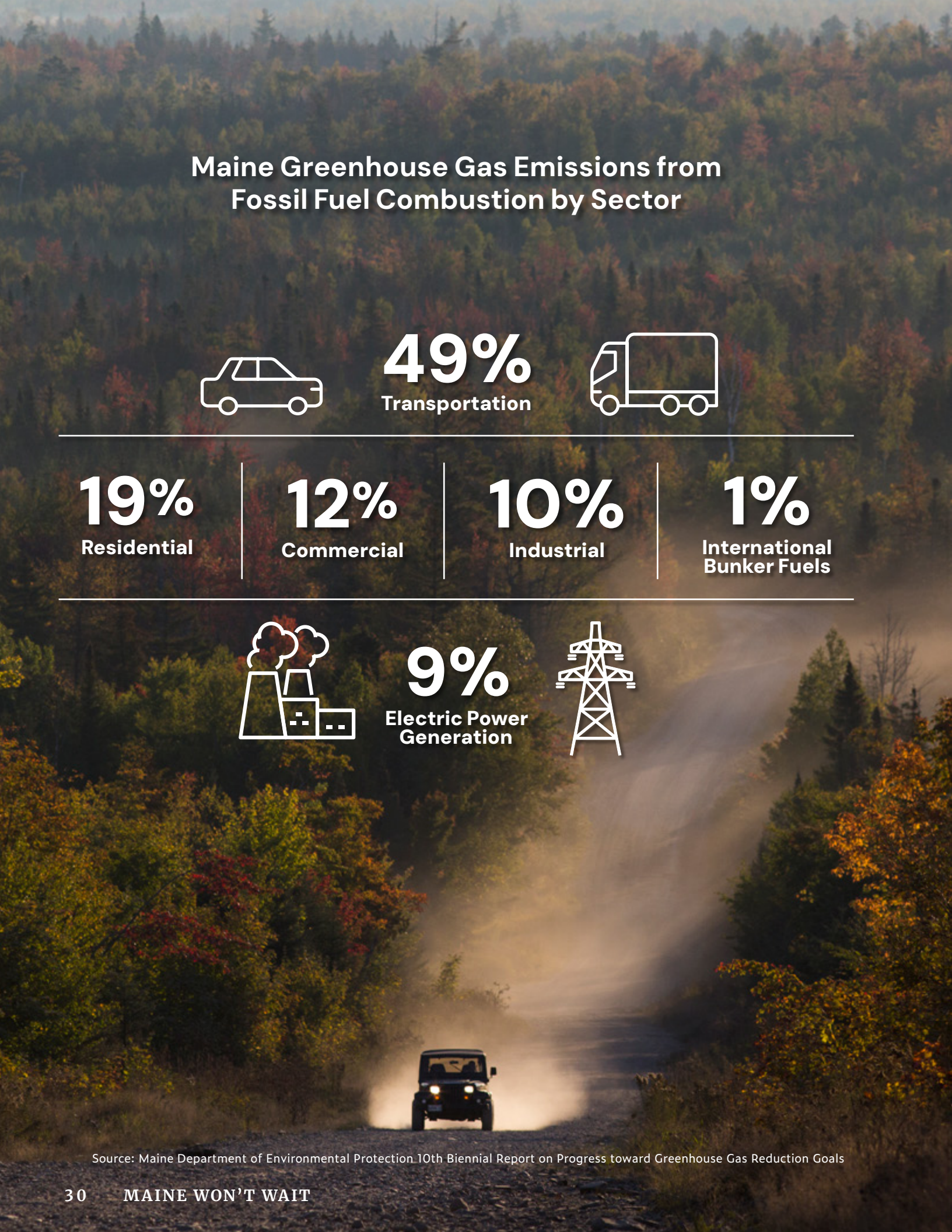
Figure 4: Maine's gross greenhouse gas emissions 1990–2021 (including biogenic emissions) Source: Maine Department of Environmental Protection 10th Biennial Report on Progress toward Greenhouse Gas Reduction Goals

fuels (fuel used for international aviation and maritime transport). The 2024 *Maine Won't Wait* update outlines strategies to reduce emissions across all sectors of Maine's economy.

In addition to reducing emissions, these strategies have the potential to improve the lives of Maine people in a variety of ways. Weatherizing homes and installing heat pumps to replace oil furnaces can save Maine households money in the heating season while also keeping them cool in the summer. Transitioning away from natural gas and toward renewable energy sources for electricity generation reduces swings in household and business electricity bills caused by global events. In the transportation sector, electric vehicles (EVs) have lower day-to-day operations and maintenance costs and create less air pollution. And improved public transportation and safer infrastructure for walking and biking can help people get where they need to go at lower cost.

For this update to *Maine Won't Wait*, the Maine Climate Council's consultants analyzed future scenarios for Maine's greenhouse gas emissions, modeling different pathways for reductions that they predict will meet Maine's 2030 and 2050 gross greenhouse gas emissions targets. There is always some uncertainty in projections and models, but they are still a useful tool for estimating the quantitative impacts of different strategies.

Figure 5 shows a potential pathway that aligns with the strategies proposed by the Maine Climate Council for this updated plan to meet the state's 2030 and 2050 statutory emissions goals. As with similar modeling conducted in 2020, it shows a transition over time to



Source: Maine Department of Environmental Protection 10th Biennial Report on Progress toward Greenhouse Gas Reduction Goals

largely electrified transportation and buildings sectors, combined with a transition to a clean electricity sector and, after 2030, the use of clean fuels such as hydrogen in applications that are difficult to electrify, such as long-haul trucking and aviation.

Even as we reduce greenhouse gas emissions, Maine's goal to become carbon neutral by 2045 will require our natural and working lands — such as forests, farms, and coastal lands — to store carbon (or sequester that carbon in natural materials) for decades to come. The Maine Department of Environmental Protection (DEP) estimates that Maine is approximately 91 percent of the way to becoming carbon neutral. This means that 91 percent of 2021 gross greenhouse gas emissions are balanced by sequestration in the environment. Working towards even greater carbon storage capacity will help Maine reach our carbon-neutrality goal while supporting healthy natural and working forests, farmland, and coastal areas that provide critical economic, recreation, and environmental benefits.

Data show that curbing emissions can be accomplished while growing the economy. To help achieve this, Governor Mills in 2019 added Maine to the U.S. Climate Alliance (USCA), a bipartisan group of 24 governors committed to the Paris Agreement's goal of keeping temperature increases below 1.5 degrees Celsius. These 24 states are reducing emissions and growing their economies at a faster pace than non-USCA states. Since 1990, Maine's state GDP grew 71 percent, from $37 billion in 1990 to $63 billion in 2021. During the same period, energy consumption declined 28 percent, from 473,831 billion British thermal units (BBtu) to 338,343 BBtu.

Strengthen Resilience to Climate Impacts

While mitigating the causes of climate change and better preparing Maine for its impacts requires significant public and private investment, inaction will cost Maine substantially more, and those costs will accelerate over time.

Coastal storms and extreme inland precipitation events over the past two years have exposed the significant vulnerability of Maine's infrastructure and communities to the effects of climate change. In December 2023 and January 2024, three historically severe storms resulted in catastrophic inland flooding (December 18, 2023) and coastal flooding (January 10 and 13, 2024) that caused unprecedented devastation to infrastructure and communities across the state. Governor Mills requested federal disaster declarations for all three storms, which were the latest in a series of disaster-level weather events over the past year — including an unprecedented six storms from December 2022 to December 2023. The December 2023 and January 2024 storms were estimated to cause $90 million in damage to public infrastructure alone, and untold damage to private property.

On December 18, heavy rainfall, rapid snowmelt, partially frozen ground, and presaturated soils all resulted in catastrophic flooding across three of Maine's largest river systems, the Kennebec River, the Androscoggin River, and the Saco River. Over a dozen river gauges reached major and/or record flood levels following heavy rain and snowmelt, resulting in the need for two municipalities to perform emergency evacuations. Flooded rivers caused the closing of more than 100 roads at peak, stranding people and communities and preventing emergency responders and power recovery crews from accessing hard-hit areas for days. Furthermore, widespread prolonged and damaging winds ranging between 45–80 miles per hour resulted in extensive downed trees and power lines, leaving over 440,000 households without power for several days. The storm claimed the lives of four people, including two whose vehicle was swept away by floodwaters.

The January 10 storm caused significant flooding and infrastructure damage along the Maine coast, including locations where heavy wind, rain, and flooding destroyed homes, buildings, and roadways, damaged lighthouses, and devastated docks, wharves, and piers serving Maine's iconic and vital working waterfronts. With natural and manmade coastal protections

Maine Emissions by Source — 1990 to 2050 Modeling

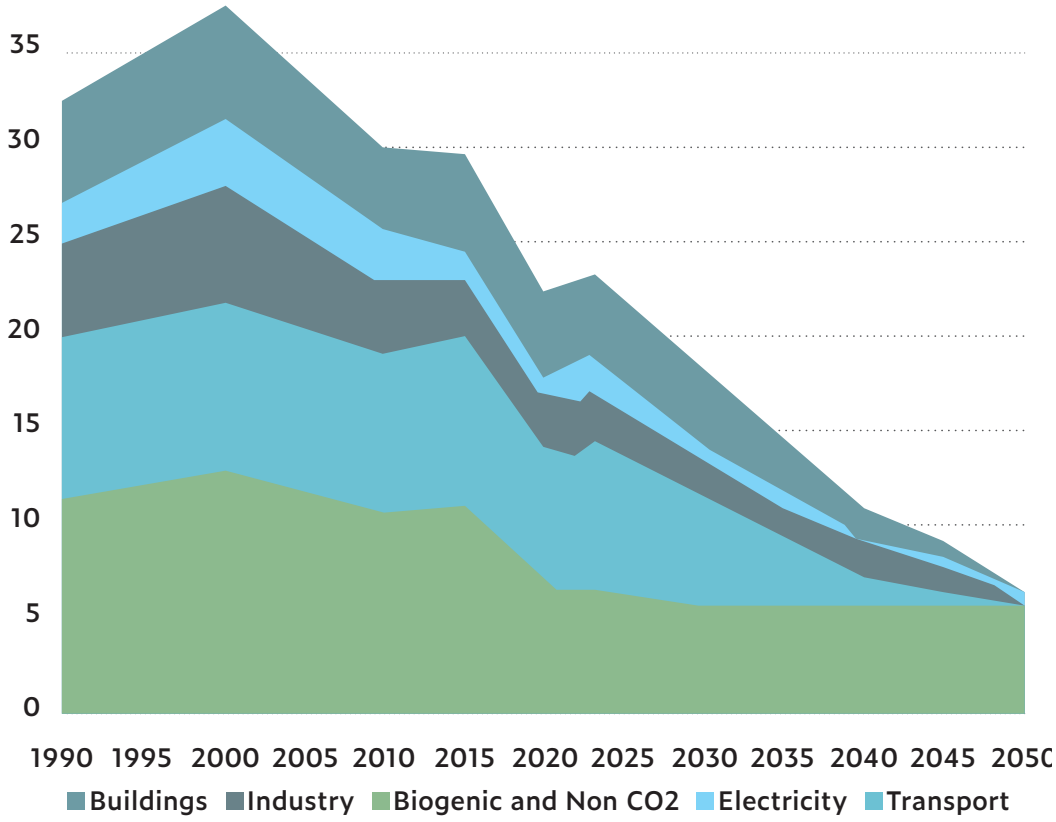


Figure 5: Source: Evolved Energy Research

Greenhouse Gas Emissions and State Gross Domestic Product (GDP)

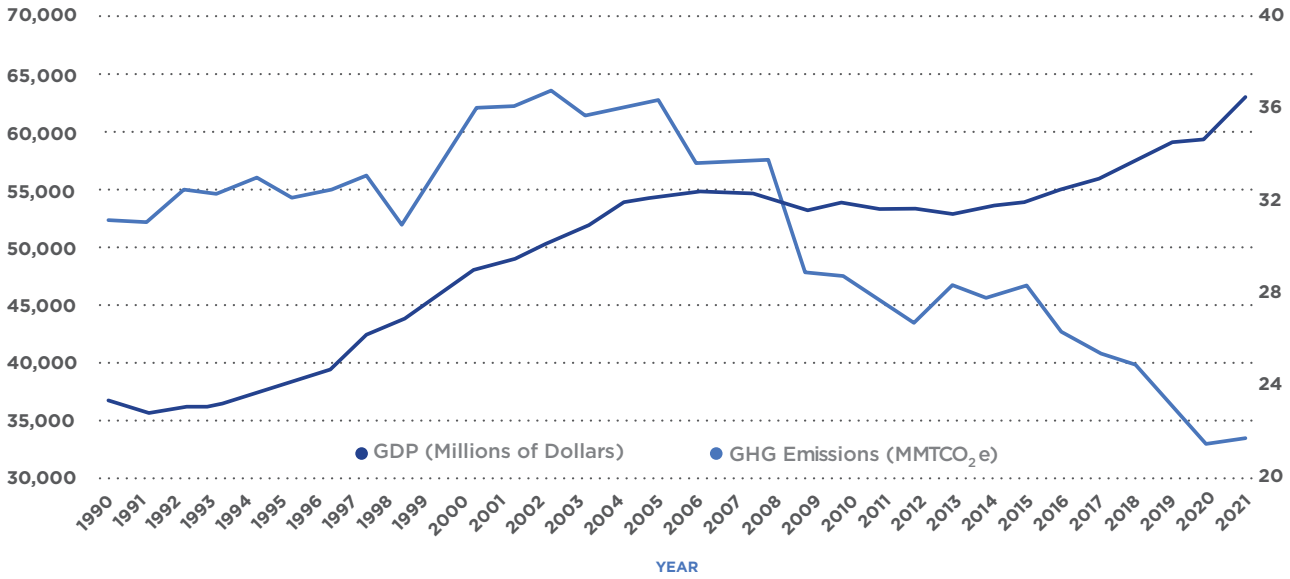


Figure 6: Source: Maine Department of Environmental Protection 10th Biennial Report on Progress toward Greenhouse Gas Reduction Goals

Rockland Fire Department and Public Services crews collaborate on post-storm tree clearing following a severe storm.

severely weakened, on January 13, the state experienced a second coastal storm and a record-high storm tide that further damaged coastal homes, businesses, beaches, and waterfronts.

These events have demonstrated the urgent need to help Maine communities prepare for and recover from climate-change impacts, including accelerated sea-level rise, storm surge, inland flooding, and increased frequency and intensity of storms. The costs of extreme weather events include repair from physical damage to homes, businesses, and infrastructure, lost wages and economic losses due to businesses being closed, and injury and health impacts.

In response to these devastating storms, Governor Janet Mills created the Infrastructure Rebuilding and Resilience Commission by executive order on May 21, 2024. The Commission is charged with reviewing and evaluating Maine's response to the storms, identifying crucial areas for near-term investment and policy needs, and developing the state's first long-term infrastructure plan to ensure that Maine is ready for the harsh storms ahead.

On November 15, 2024, the Commission released an interim report, recommending near-term rebuilding and resilience priorities. The interim recommendations include immediate actions to improve storm response, such as actions to enhance communications during and immediately after emergencies, strengthen the role of philanthropic and nonprofit organizations to respond rapidly to provide immediate relief after a disaster, and expedite state permitting for post-disaster rebuilding.

The Commission also made recommendations to build a strong foundation of resources and capabilities for resilience, such as recommendations to improve data for risk management decision-making, identify and strengthen critical vulnerable infrastructure including by maximizing federal funding, improve energy infrastructure and adopt clean energy technologies to increase energy resilience, and create additional capacity at the local, regional, and state levels to support communities to proactively prepare for disasters.

Finally, the Commission's recommendations included actions to integrate resilience for the long term, including to build long-term analytical capabilities for

understanding and communicating about risk by establishing a robust Disaster and Risk Information Center and exploring options for buildings and infrastructure to become more resilient through building codes and standards. The Commission will deliver a long-term resilience plan for Maine in May 2025.

Resilience means improving the ability of Maine communities, individuals, industries, and households to prepare for, withstand, and recover from the impacts of climate change. This encompasses a range of strategies, from bolstering critical infrastructure such as the electrical grid to protecting natural ecosystems to understanding the impact of climate change on people's physical and mental health. Maine communities need the resources to confront the challenge of climate change with solutions that make sense for their unique circumstances and needs.

The strategies in this plan represent the highest priorities for the state to help communities prepare to face climate change head-on, with emphasis on underserved communities and people who are most vulnerable to climate impacts.

Create Jobs and Economic Prosperity

Many of the strategies in *Maine Won't Wait* will grow the economy, create jobs, protect key economic sectors most at risk from climate change, and foster innovation in new business sectors that will drive climate solutions.

Governor Mills' bold new target of 100 percent clean electricity by 2040 provides strong incentives for emissions reductions and sustained economic growth. The state's clean energy and energy efficiency sector requires a skilled workforce, creating thousands of well-paying jobs that are already helping Maine families thrive. Replacing fossil fuels imported from elsewhere with clean energy produced in Maine will keep millions of dollars in the local economy. Maine's businesses are leading with clean energy and energy efficiency investments that reduce emissions and costs.

Maine's research and development (R&D) institutions lead the world in advancing climate-critical discoveries in floating offshore wind, advanced climate-friendly wood products, and food and agriculture technologies. Investing in R&D will support continued innovation to turn research into marketable products.

Support for climate adaptation can increase the resilience of Maine's fishing, farming, and forestry industries in the face of climate threats. Investments to take advantage of new market opportunities arising through climate action can encourage new economic growth.

Building back from severe storms and preparing for future extreme weather events will require infrastructure investments in working waterfronts, roads and bridges, wastewater, and water systems, creating jobs and economic opportunity while positioning Maine to better weather the impacts of climate change.

Many of the strategies recognize that investing in climate action makes both economic and environmental sense. Maine's state economic and workforce development strategy focuses on increasing the state's workforce and investing in innovation and Maine businesses to drive economic growth.

In 2021, as Maine's economy confronted the COVID-19 pandemic, Governor Mills and the Legislature launched the Maine Jobs and Recovery Plan (MJRP) to invest nearly $1 billion in federal American Rescue Plan funds to improve the lives of Maine people and families, help businesses, create good-paying jobs, and build an economy poised for future prosperity. To date, the MJRP has invested $847 million in initiatives targeting Maine's workforce, resilience, infrastructure, and environmental protection.

Tens of millions of dollars are supporting clean energy, agriculture, seafood, forestry, and other technologies. Other transformative workforce investments include free community college for recent graduates, revamped employer incentives that directly support worker training, major efforts to draw young people into quality careers through career exploration and apprenticeship, and cutting-edge modernization of equipment and facilities across our technical schools, community colleges, and public universities. Maine must sustain and build on these investments to ensure that the state has the workforce necessary to realize the economic benefits of climate action.

Bring Climate Action to All Maine People

The Maine Climate Council is committed to ensuring that Maine's climate strategies benefit all Maine people, especially underserved communities and people most vulnerable to climate impacts.

This plan commits the state to a goal that 40 percent of climate infrastructure and resilience investments are directed to underserved communities. The plan also sets the state on a path to ensure that low- and moderate-income households benefit from Maine's transition to a clean energy and electrified economy, such as by directing funding for heat pumps, weatherization, clean energy, and clean transportation to these households.

The plan outlines numerous recommendations to improve the lives of Maine people through actions that reduce emissions and make Maine more resilient. This includes establishing an energy coaches program to help Maine people access options, investing in mental health care and education for those impacted by climate change, and investing in shared, public, and active transportation to provide more options for Mainers to get where they need to go. Throughout the plan, the Council has placed special emphasis on actions that help small, rural, and underserved communities take climate action, by directing funding to these communities and by making state and federal grant programs more accessible to towns with limited capacity.

The Maine Climate Council also commits to engaging with people from underserved communities through partnerships with community-based organizations that have existing relationships with the communities that they serve. The plan recommends that the Council and state agencies that are implementing climate policies and programs involve underserved people and communities in the development of these programs, to ensure that people see themselves reflected in the state's climate actions.

While climate change is a global phenomenon, some communities and populations experience its impacts more acutely than others. In Maine, those particularly vulnerable to climate change include rural, older, and lower-income residents, as well as people and places with economies tied to natural resources. At the same time, individuals most affected by climate change impacts may miss out on the benefits of climate programs, such as those offering incentives for electric vehicle adoption or converting to energy efficient heat pumps.

In 2020, *Maine Won't Wait* established the Equity Subcommittee of the Maine Climate Council to "support ongoing planning and implementation of Maine's climate strategies to ensure shared benefits across diverse populations of Maine people and to understand any concerns for implementation."

The Equity Subcommittee met with the Climate Council working groups, members of the public, state agencies, and others to develop recommendations including new actions to ensure that climate benefits and program spending reach communities with high climate vulnerability. The Equity Subcommittee also made recommendations for how the Climate Council can hear from diverse Maine people throughout the climate planning process, including restructuring the subcommittee to better integrate into the Climate Council and working group processes.

As a result, over the last year, two Equity Subcommittee members have participated in each Climate Council working group to apply their lived and professional experience to help the working groups consider how Maine's climate strategies will ensure shared benefits across diverse populations in Maine. A leadership group of Climate Council members helped to lead and facilitate conversations with the Council about these topics.

As part of the planning process to update *Maine Won't Wait*, the Governor's Office of Policy Innovation and the Future, on behalf of the Maine Climate Council, contracted with the Senator George J. Mitchell Center for Sustainability Solutions at the University of Maine to partner with community-based organizations across the state and engage diverse perspectives in the climate-planning process. The Mitchell Center worked with 21 organizations to conduct 69 engagement activities, including focus groups, surveys, and conversations. Their findings are summarized in an executive summary of the report, "Engaging Low Income and Disadvantaged Populations in Maine Climate Planning" and helped inform the Climate Council deliberations. Key findings in the Mitchell Center report included the importance of centering poverty in the climate action plan, of climate education and outreach with diverse populations, and of public transportation to meet Mainers' basic needs.

The Maine Climate Council will continue to prioritize ongoing outreach and engagement with diverse communities across the state. This includes partnering with community-based organizations to reach underserved individuals and communities to increase awareness about climate programs and opportunities and supporting navigator programs that connect people to climate-related programs and information.

In updating *Maine Won't Wait*, the Climate Council is adopting additional metrics to ensure that the benefits of climate programs reach diverse populations of Maine people, especially low-income households. The Equity Subcommittee will continue to meet to monitor progress towards equitable climate action plan implementation.

Maine Climate Council — Tribal Collaboration Forum

The Maine Climate Council collaborated with and included experts from multiple Tribal Nations on its working groups and subcommittees. The Council also includes Tribal leadership, with former Penobscot Ambassador Maulian Bryant serving as the Tribal representative to the Council since 2019 and as a prominent voice on a variety of climate issues.

The State of Maine and Tribal governments also have collaborated on several federal and state funding opportunities in recent years, including significant climate-resilience opportunities through the Bipartisan Infrastructure Law and the Inflation Reduction Act. Tribes additionally have their own initiatives and relationships with federal programs and agencies related to energy and climate, and individual Tribal governments have been successful in winning national funding awards related to climate action.

With growing climate-related impacts and urgency to act, increasing collaboration between the State of Maine and Tribal governments could lead to further progress. As the Maine Climate Council completes its second four-year climate action plan, the State of Maine and Chiefs of all five Tribal governments have agreed to a regular State-Tribal Climate Collaboration that will serve as an ongoing forum for dialogue. The forum will serve as a venue to discuss mutual areas of interest, including projects and strategies to reach both state and Tribal climate goals; consider areas for potential partnership and capacity building; and increase understanding and learning about climate challenges and opportunities for both the state and Tribes.

STRATEGY A

EMBRACE THE FUTURE OF TRANSPORTATION IN MAINE

Transportation is responsible for 49 percent of Maine's carbon emissions from fossil fuels, making the sector one of Maine's largest opportunities to combat climate change. Most of those emissions come from the tailpipes of passenger cars and trucks as many drivers travel long distances across our large, rural state. Continued progress will depend on faster adoption of cleaner electric vehicles and plug-in hybrids, improved public and active transportation options, and better land use planning for new development that helps Mainers avoid or reduce driving.

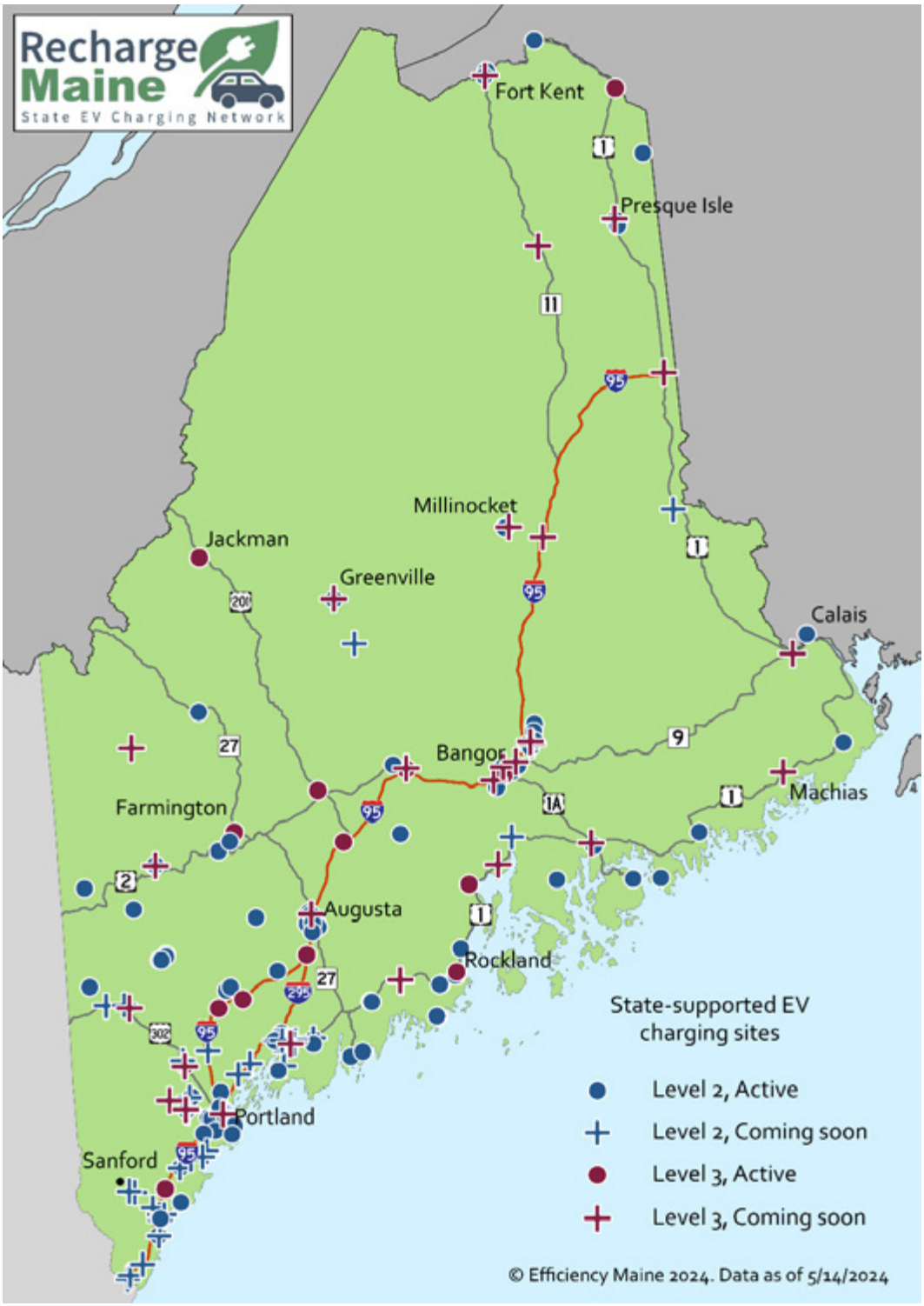
Accelerating the sales of new and used electric vehicles (EVs), including plug-in hybrid vehicles (PHEVs), is both the least costly and the most effective way to deeply cut greenhouse gas emissions and improve air quality and public health. Rapidly improving new technology in vehicles, batteries, and charging infrastructure will support this transition, especially as EVs and PHEVs become increasingly price-competitive and sometimes cheaper for drivers than gas-fueled vehicles, especially those regularly commuting longer distances.

Access to reliable, convenient, and affordable charging is critical to EV adoption. To strengthen drivers' confidence in EVs, the state should continue to invest in public charging infrastructure and launch a robust public education campaign about the efficiency, safety, and cost-effectiveness of EVs and PHEVs. Maine should increase incentives for low- and moderate-income Maine drivers making vehicle purchases, including new and used vehicles, to help make EVs and PHEVs a realistic option for more Maine households.

In addition to passenger cars and other light-duty vehicles, the state must encourage zero-emission trucks and buses, as well as electric and hybrid ferry and boat fleets, to reduce overall transportation emissions from these important sectors. Maine should develop an incentive program for medium- and heavy-duty vehicles, as well as connect fleet owners with advice and support to increase the rates of truck and bus fleet electrification. This electrification will reduce emissions and air pollution, especially for communities in high-traffic areas. As purchase prices come down over time and the market delivers more and more of these vehicles, public and private sector fleet owners and operators will save money across the lifespan of their fleets, paying less for day-to-day operations and maintenance while taking meaningful climate action.

Electrifying vehicles is the most effective way to curb greenhouse gas emissions from Maine's transportation sector, but improving public and "active" transportation—or human-powered transportation such as walking and biking—is essential to meeting Maine people's needs and connecting climate action to their daily lives. Safe and convenient sidewalks and bike lanes, shared commuting options, and access to convenient public transportation, including bus service and rail, give Maine people more options to get where they need to go, while helping to clean the air they breathe and protect their health.

Finally, a resilient transportation network with roads, bridges, and culverts that are ready for increasingly extreme and frequent rain events and storm surges will make travel safer for all Maine riders and drivers and help ensure that emergency services can reach Maine communities when they're needed most. Continued investment in improving transportation infrastructure is vital for making Maine communities resilient to climate change impacts.



Recharge Maine

Recharge Maine is the state's initiative to create a convenient, reliable, and accessible EV charging network across Maine, especially along the most traveled roads and highways. Through Recharge Maine, the state is investing $52 million in state and federal funding to install more than 700 charging ports statewide. In 2024, the Recharge Maine initiative completed its first projects funded by federal National Electric Vehicle Infrastructure (NEVI) formula funding: 13 new fast charging ports along Route 1 in Rockland as well as five new ports along I-95 in Augusta. In 2024, the Recharge Maine initiative additionally installed 40 new Level 2 charging ports throughout the state. In future years, Recharge Maine will help expand Level 2 charging at multifamily buildings, large workplaces, community locations, and regional service centers and will help expand DC fast charging along highways and within communities.

Transitioning to Electric Vehicles

Rebates and tax incentives are helping to make new electric vehicles (EVs) more affordable for more Maine people. In 2021, Efficiency Maine increased rebates offered for low- and moderate-income residents and made used vehicles newly eligible for a rebate for low-income households. The federal Inflation Reduction Act also provides up to $7,500 at the point of sale to individuals, businesses, and tax-exempt entities to purchase new and used EVs and plug-in hybrid electric vehicles (PHEVs).

Since 2020, the state has accelerated the expansion of EV charging stations, leveraging significant federal funds to invest in a statewide network of public, high-speed EV chargers. More than 360 new EV charging ports have been made available through these efforts, and the number of publicly funded EV charging ports is expected to reach more than 700 over the next few years.

Strengthening driving alternatives

The Maine Department of Transportation (MaineDOT) released its first Statewide Active Transportation Plan which maps a path to improve safety and accessibility for walkers and bikers. MaineDOT's Complete Streets policy will help ensure that all users of Maine's transportation system—bicyclists, pedestrians, and people of all ages and abilities—can travel safely and efficiently.

The Maine State Transit Plan outlines a path for improving public transportation in Maine and transitioning to hybrid and electric fleets when and where it makes sense to do so. MaineDOT has assisted 12 regional and local transit agencies with the development of plans to transition their fleets to electric or hybrid vehicles. In addition, both the MaineDOT and Northern New England Passenger Rail Authority have been awarded significant recent federal funding to improve freight lines and provide for upgrades to passenger rail service and connections.

MaineDOT was awarded nearly $24 million in federal grant funding for the purchase of 24 electric buses and charging infrastructure to replace buses operated in the Downeast and Acadia region. MaineDOT, through its Rural Workforce Transportation Pilot program, is also investing in innovative transportation pilots such as vanpooling, e-bike sharing, and connecting rural workers with employment opportunities.

1

Accelerate Maine's transition to light-duty electric and plug-in hybrid electric vehicles

- **Put 150,000 light-duty battery electric and plug-in hybrid vehicles on the road in Maine by 2030.**
- **Lower the cost of new and used electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) for low- and moderate-income drivers, ensuring that at least 50 percent of all funding for light-duty EV rebates reaches those drivers.**
- **Expand public EV charging infrastructure with a goal of more than 700 publicly funded EV charging ports installed by 2028, including in underserved and rural communities.**
- **Launch new EV education and awareness campaigns for Maine communities, consumers, car dealers, school districts, and employers.**
- **Train Maine's first responders to be prepared to safely handle fires involving EV batteries.**
- **Advance policies that make lower- and zero-emissions vehicles more attractive choices for consumers and improve overall vehicle efficiency, including through information on the emission and efficiency benefits of non-plug-in hybrids.**

EVs currently account for more than 6.5 percent of new vehicle registrations in Maine, up from less than 1.5 percent in 2020.[1] This progress is meaningful, but Maine is not immune to the forces slowing EV adoption nationally and must do more to make EVs accessible and affordable to a broader range of Maine people.

To further increase the number of EVs on the road, Maine must continue to offer attractive EV rebates and expand the dealer network offering rebates, especially in rural communities. Low- and moderate-income drivers will need additional financial support to make EVs affordable; in 2024, only 17 percent of state EV rebates went to these households. The state should explore additional options to make EVs more affordable, including broadening access to financing, tax incentives, and federal funding opportunities.

To help more drivers switch to EVs, Maine needs to continue to expand its statewide network of reliable EV charging. Maine currently has more than 1,000 EV charging ports statewide. Through the Recharge Maine initiative, the state is investing over $50 million to install more than 700 new charging ports across Maine by 2028.[3] Nearly 20 percent of these ports

Greenhouse Gas Emissions from electric Vehicles

Accounting for the environmental impact of EVs requires considering impacts related to fuel production, processing, distribution, and use. In Maine, the electric fuel used by an EV is cleaner on average than in other states due to Maine's Renewable Portfolio Standard, a policy that requires an increasing percentage of renewable energy to power Maine's grid each year. Due to the lower carbon intensity of electricity generation in Maine, the electricity used to drive an EV today will have a 92 percent lower emissions impact than the fuel used to drive a vehicle with an internal combustion engine.[2]

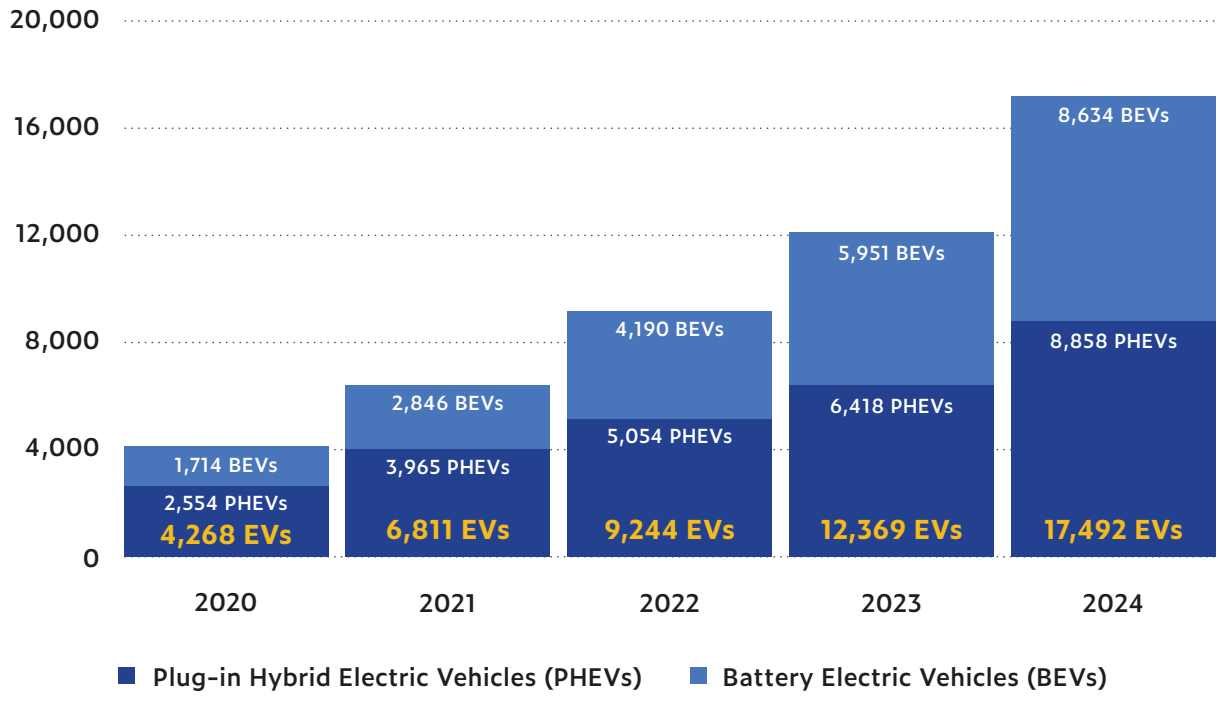
will be fast charging, and nearly 85 percent of these funds are from federal grants. This investment will create a convenient and accessible charging network along Maine's most traveled roads and highways, in its rural communities and service centers, near multi-unit buildings and low-income neighborhoods, and at workplaces, ensuring Maine drivers can travel easily to every corner of the state.

Public perception about EVs remains a challenge, and Maine must do more to show that they work for Maine drivers. Robust education and awareness efforts are needed to explain how EVs work, promote their economic and environmental benefits, and publicize the availability of incentives and charging infrastructure. Those efforts should be tailored to diverse audiences, including municipalities and schools, business owners, and consumers.

Fires involving electric vehicle batteries, while rare, are part of this public perception challenge and require specialized skills and equipment to extinguish safely. Maine's first responder community needs to be well-equipped to handle emergencies involving EVs. In 2024, the Maine Fire Service Institute of Southern Maine Community College hosted two first responder trainings in Bangor and Brunswick centered on EV safety. Maine should expand the number of education opportunities available to first responders in all parts of the state, including small and rural communities.

Finally, Maine must continue to pursue policies that make EVs and PHEVs more attractive and affordable for consumers. This includes continued analysis of utility regulatory reform and other policies necessary to meet our statutory emissions targets. Programs that allow an electric utility to cover some of the costs of installing EV infrastructure for the public sector, public transportation, and low-income customers can help reduce some of the barriers to installing EV charging.

Electric Vehicles on the Road in Maine



Source: Maine Department of Environmental Protection and Atlas Public Policy

SCOTT LAWYERSON

DRIVING AN ELECTRIC SCHOOL BUS

Over the past three years, Maine has received $20 million for 72 electric school buses across 30 school districts through the federal Environmental Protection Agency's Clean School Bus program. The Upper Kennebec Valley High School was among the first to receive funding and just began its second school year using the bus full time.

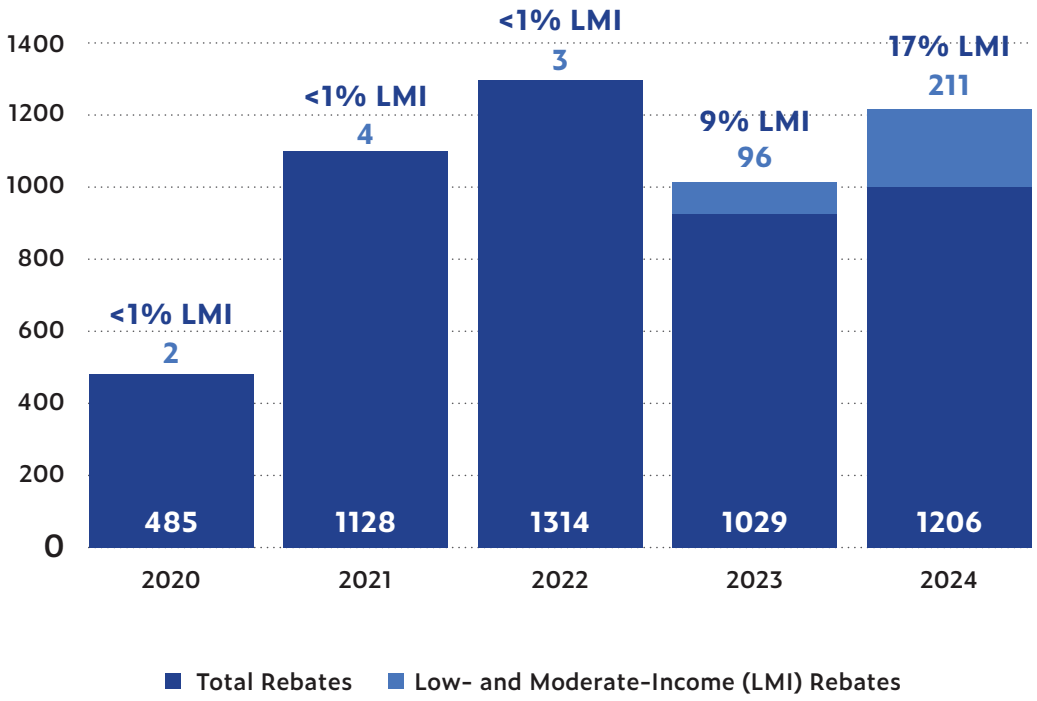
"I think a lot of people have warmed up to it," head driver Scott Lawyerson said in a Natural Resources Council of Maine blog post. "It runs well every day, and the kids love it."

"It handles well, and the heating system is awesome, works great," Lawyerson added.

Lawyerson, also the local fire chief, said while many in the community were initially resistant to the new bus, he made sure anyone who wanted to see it for themselves had that opportunity.

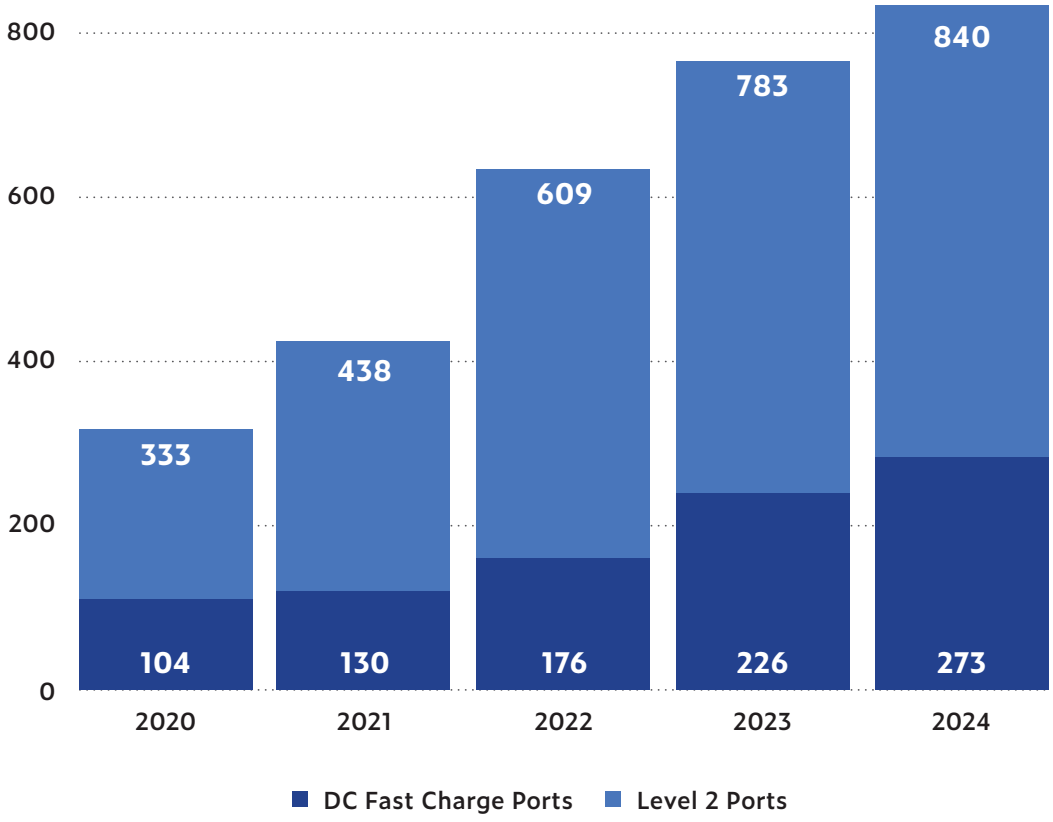
"They ask me questions about it, and I'm very honest with them."

Electric Vehicle Rebates



Source: Efficiency Maine

Public EV Charging Ports



Source: Atlas Public Policy and Alternative Fuels Data Center

DYLAN PARDUE

DRIVING ELECTRIC IN WASHINGTON COUNTY

Dylan Pardue has driven his electric Nissan Leaf through three Maine winters on the rural roads of Pembroke in Washington County. It performs great in the cold; the low, heavy battery gives it great handling and traction, and he's never been stranded.

"You have to think about charging differently than stopping for gas," he said. "It's more like charging up your phone every night and starting the day with a full battery."

Pardue purchased his Leaf in 2021 after driving his previous car, a Subaru, to the 200,000-mile mark. He made the jump to an electric vehicle (EV) for a lot of reasons, including savings and climate concerns.

"EVs significantly reduce lifecycle carbon dioxide emissions," he said. "They have better performance and instant torque, and I no longer need to deal with gas. EVs offered better technology, a quiet drive, and reduced maintenance costs."

His employer, the Cobscook Institute, also offered Level 2 EV charging, a faster option than slower at-home Level 1 charging.

"I rent and only have a standard outlet at home, and it's sufficient for me with workplace charging. I've saved quite a bit on gas," he said.

But even if he charged his EV at home using a standard outlet, he says there would still be a slight savings, or similar to gas depending on its current price. And that's not considering the additional savings of driving a non-combustion engine vehicle.

"There is a lot less variability in electricity rates versus gas," he said.

He's hopeful that he'll see more EV adoption in rural areas like his in the coming years, thanks to investments in charging network expansion, a growing used EV market, and more affordable models in production.

"I don't plan to buy anything that burns fossil fuels again if I can help it."

2

Accelerate Maine's adoption of zero-emission medium- and heavy-duty vehicles

- **By 2028, launch pilot projects for zero-emission trucks, municipal and school buses, ferries, and boats to demonstrate and evaluate performance, reliability, and cost savings.**
- **Launch near-term fleet advisory services to help medium- and heavy-duty vehicle fleets adopt clean vehicles.**
- **Develop an incentive program for zero-emission medium- and heavy-duty vehicles.**
- **Advance policy options, including collaborative utility and regulatory approaches, that accelerate the adoption of zero-emission medium- and heavy-duty vehicles.**

While light-duty passenger vehicles account for most of Maine's transportation emissions, medium- and heavy-duty trucks and buses contribute a significant 27 percent.[4] The state's recent Clean Transportation Roadmap for Medium- and Heavy-Duty Vehicles (November 2024) charts a path forward for increasing the number of clean trucks and buses in Maine to reduce these emissions. The Roadmap recommends supporting pilot clean truck projects to evaluate and demonstrate performance, reliability, and cost-effectiveness; launching a fleet advisory service to help fleets prepare for electrification; and developing an incentive program for zero-emission trucks to support early market adoption. The state will continue to pursue policy options, including collaborative utility and regulatory approaches, that accelerate the adoption of zero-emission medium- and heavy-duty vehicles and will also continue to explore alternative fuel options, including hydrogen.

Many Maine transit operators and fleet owners are ready for electrification. MaineDOT worked with eight transit agencies to complete transition plans for electric and hybrid vehicles, and transition plans for four more agencies are under way. As MaineDOT and transit agencies implement these transition plans, transit operators and fleet owners who are interested but not yet pursuing electrification will have models to inform their decision-making.

The Maine Department of Education's new Green Schools Program will build on the successful efforts of local school districts to increase clean school bus use across the state. Maine has already secured more than $20 million in federal EPA funding for more than 70 clean school buses statewide.

Some sectors of Maine's marine economy have electrification and emission reduction opportunities, while others require more innovation and clean-fuel options. MaineDOT will continue to explore electric and hybrid options for future state ferry replacements, including through a $16.6 million federal grant that will fund safety enhancements and other improvements to support the future operation of hybrid ferries in Lincolnville and Islesboro. Maine and key stakeholders should continue to support innovation and efforts to help commercial marine and small harbor craft adopt electrified propulsion and other low- and zero-emission vessel technologies.

3

Invest in public, active, and shared transportation

- **Work with the Maine Transit Association to increase transit ridership by 5 percent annually to reach or exceed pre-COVID-19 ridership levels by 2029.**
- **Increase access, performance, funding, and use of shared and public transportation systems in Maine, in partnership with municipalities, transit providers, the New England Passenger Rail Authority, state agencies, and other partner organizations, including:**
  - Launch and expand innovative transit pilot projects in urban and rural areas, including with transportation providers for MaineCare members and with employers through workforce-transportation programs.
  - Improve the experience and efficiency of transit by streamlining how riders pay fares, tracking vehicles in real-time, coordinating routes and schedules among transit agencies, and improving amenities and facilities.
  - Work with transit providers to develop standards for, track, and improve on-time performance.
  - Support transit providers in evaluating and improving existing services and study and document the need for potential new transit services, including in underserved communities.
  - Continue to work with transit providers to implement plans to transition to electric and hybrid vehicles.
  - Continue to work with transit providers and stakeholders to increase awareness of public transportation as options for travel, including bus and rail service.
  - Increase shared commuting by expanding participation in GO MAINE.
- Fund and support expanded opportunities for safe bicycle and pedestrian travel, including:
  - By 2029, expand safe active transportation infrastructure in at least 10 villages and downtowns, paving at least 75 miles of the shoulder along rural roads and building at least 10 miles of priority off-road trails.
  - Continue to work with transit providers and stakeholders to increase awareness of public and active transportation as options for travel, as well as bike and pedestrian safety.
  - Help municipalities to fund local active transportation projects by establishing an annual Active Transportation Partnership Initiative by 2025.
  - Identify and map priority routes for walking and biking by 2025.
  - Integrate public transit, biking, and walking more fully into state transportation planning processes.
  - Share information about the benefits of e-bikes for commuting and consider opportunities to utilize e-bikes to support workforce transportation programs.
- **Invest in clean transportation programs and projects that offer low-carbon alternatives to help offset emissions from other transportation projects that could increase vehicle traffic.**
- **Over the next four years, monitor and support national research aimed at understanding greenhouse gas emission impacts of public, active, and shared transportation projects.**
- **Encourage utilization of new programs that provide universal access to high-speed, affordable internet service and may reduce the need for driving.**

Bus Ambassadors undergo training at a Greater Portland Metro facility. Bus Ambassadors teach immigrants, refugees, and asylum-seekers with limited English proficiency how to use transit in the region. When someone submits a request for assistance, they're matched with a Bus Ambassador fluent in their native language who meets them at a bus stop and shows them how to pay for the bus, map their route, and signal for the bus to make a stop. This is the fourth year of the program, which is run by the Greater Portland Council of Governments in partnership with Greater Portland Metro, South Portland Bus Service, and Biddeford Saco Old Orchard Beach Transit.

ENGAGING TRANSIT USERS IN IMPROVING PUBLIC TRANSPORTATION

Marcel Ntagora is a community engagement coordinator at the Greater Portland Council of Governments.

"We bring people who face transportation barriers to the decision-making table," he said. "By elevating the voices of people in underrepresented communities, we're making transportation more equitable and accessible for all users. The people in the program are regular transit users and have different challenges. The program allows them to speak directly to decision-makers about their challenges and offer ideas about improving public transportation for everyone."

The Maine Department of Transportation (MaineDOT) has strategic plans to support the use of public and active transportation. The 2023 Maine State Transit Plan (MSTP) and the Maine State Active Transportation Plan (MSATP) both outline specific steps the state can take to improve equitable access to transportation alternatives.

In accordance with the MSTP, MaineDOT will track and support continued increases to state operational transit funding as budget resources allow. The state should continue efforts to sustainably bring state operational funding for buses, vans, and other on-road vehicles to $5 per capita, up from $3.95 per capita that the state currently spends on these vehicles. Considering all state transit operations—including buses, vans, passenger rail, and ferries—the state now provides $12.45 per capita in annual operational funding. The fiscal year 2024–2025 biennial state budget increased annual state support for on-road transit to $5.53 million in fiscal year 2025, an increase of over 380 percent from $1.15 million in fiscal year 2023. The state should support transit providers to evaluate and improve existing services and study and document the need for potential new transit service, including in underserved communities with demonstrated transportation needs. MaineDOT has identified $2 million in annual state funding for these and other similar advancements in 2025.

Also in line with the MSTP, MaineDOT will continue to collaborate on innovative transportation pilot projects to help Mainers get where they need to go. This includes working with the Maine Department of Health and Human Services to provide improved transportation options for MaineCare members and continuing the existing Workforce Transportation Pilot program to support innovative local, regional, and state approaches to providing transportation for current and potential employees to job opportunities.

Welcoming Walkers along the Penobscot River in Brewer

A recently completed pathway in Brewer shows how active transportation infrastructure can make communities safe and healthy for all residents. Located along the Penobscot River, the Brewer Riverwalk features themed plantings, paved walking paths, a waterfall, and an area for events such as weddings or performances. The project begins near the Chamberlain Bridge and continues for 3,700 feet along the river, consisting of benches, lights, and free Wi-Fi. The initial phases included a large shoreland stabilization project, the creation of a Children's Garden, and an outdoor fitness center.

BATH IRON WORKS HELPS ITS WORKFORCE COMMUTE EASIER AND GREENER

Nearly 4,000 employees descend on the Bath Iron Works (BIW) Bath shipyard daily, with over half of those employees commuting more than 70 miles round trip.

BIW has found ways to make their employees' trips easier and greener by participating in the Workforce Transportation Pilot, a program recommended in *Maine Won't Wait* and created using federal funds through Governor Mills' Maine Jobs and Recovery Plan. This includes expanding bus service for employees from Lewiston to Bath, with an additional stop in Lisbon Falls. Ridership on the Blue Line Express bus remains steady and represents a critical, reliable means of transportation for employees commuting from the Lewiston area.

BIW has also further expanded its involvement with GO MAINE, the statewide commuter program to help employees find rides to work and offer emergency rides home. BIW has 493 active participants in GO MAINE, an increase of 201 since grant funding began.

Maine can make transit more accessible and appealing to more riders. Strategies like improved coordination of routes and schedules among transit agencies, seamless fare payment, and real-time vehicle tracking will make it easier and more convenient for Maine people to use public transportation.

As more cars, trucks, and buses transition to electric, it will be important to help transit agencies adopt these technologies to reduce emissions and lower operational costs. MaineDOT will continue to explore funding opportunities, such as federal grants to help transit providers transition to hybrid and electric vehicles.

Expanded access to and education about shared commuting options like carpooling will help reduce single-occupancy trips and reduce emissions. MaineDOT will continue to expand and promote GO MAINE with the goal to annually meet or exceed GO MAINE's current metrics for the number of members (11,500), reporting members (1,000), vehicle miles reduced (2.2 million miles), and carbon emissions avoided (1,000 tons), and revise metrics as necessary.

Active transportation, including walking and biking, is an affordable and healthy alternative to driving a car for many commutes, errands, or other shorter trips. By 2029, dependent on federal funding and in line with the MSATP, the state will improve safe biking and walking infrastructure in 10 village downtowns, pave the shoulders of 75 miles of rural roads, and build more off-road recreational trails for Mainers to use and enjoy. Establishing an annual Active Transportation Partnership Initiative program by 2025 will help municipalities to fund active transportation projects. This work will build on the historic $30 million trail bond to repair and enhance trails across the state, signed into law by Governor Mills in April 2024 and approved by Maine voters in November 2024. MaineDOT will continue to integrate active transportation into planning processes, such as integrating active transportation with transit routes. MaineDOT will continue to expand access to bike-share programs through collaborations with public, private, and nonprofit entities and the Maine Department of Labor.

Increased awareness and outreach are key to helping people understand their transportation options and use them safely. MaineDOT should work with transit providers and partner organizations to provide education about public and active transportation options, as well as pedestrian and bicycle safety.

Finally, access to high-speed, affordable internet service that supports telecommuting, remote education, telehealth, and access to online services can help to reduce travel and emissions. The Maine Connectivity Authority, established in 2021 to expand access to reliable, high-speed, and affordable internet service statewide, has leveraged more than $250 million in state and federal funds to expand broadband in Maine, resulting in 86,000 high-speed internet connections. This has reduced the number of Maine homes and businesses with no modern internet connection to 29,000, or 5 percent of the locations in the state, down from 18 percent in 2021.

"Reduce CO2" by Nora Lin, age 17

Earlier this year, Climate&Me, the youth-focused initiative of the Maine Climate Council, created the Youth Climate Art Challenge for Maine kids and youth ages 9–22. Participants submitted work representing their perspectives on Maine's climate challenges and solutions, and their vision of Maine's future.

CHRIS MORIN

GETTING BACK TO WORK WITH AN ELECTRIC BIKE

Chris Morin was one of the first participants in the E-Bike Partnership pilot project jointly run by the Maine Department of Transportation and the Maine Department of Labor. In partnership with the Bicycle Coalition of Maine, Eastern Maine Development Corporation, and the Bangor Area Recovery Network, the pilot provided Chris with an e-bike, helmet, toolkit, safety vest, and training in November of 2023. He's been logging hours and miles on his e-bike ever since.

Morin, who is in substance use recovery, was living in the Orono-Old Town area at the time and struggling to arrange transportation to Bangor to his required daily Treatment and Recovery Court appointments, substance use testing, and counseling, and to look for work.

"I had been a CNC machinist for more than 20 years and lost it all in just five months. I went from being on top to being vulnerable and living on the streets. I've been in recovery for 778 days, and this e-bike has been an awesome help."

In addition to cycling more than 100 miles in an average week to get to Bangor for appointments, Chris secured not only one job but three. During the concert season, Chris works for Waterfront Concerts, setting up and breaking down the stage equipment for visiting artists and in facilities maintenance during the events. The e-bike enables Chris to be available whenever needed, in the early mornings and late at night. In addition, Chris secured a year-round position cleaning professional office buildings. With the e-bike, he can commute between a half dozen worksites for this job.

"Not having wheels was a huge stress. Now, the e-bike is also a source of enjoyment. I made a lot of lifestyle changes and have dropped 120 pounds. Having the e-bike for exercise and for the mindset it helps me keep has been a big part of it all for me."

4

Improve the resilience of Maine's transportation system

- **Continue to invest in programs that strengthen and protect transportation infrastructure and advance planning to redesign or relocate the most vulnerable transportation infrastructure where necessary.**
- **Advance coastal and inland modeling tools to identify vulnerable transportation infrastructure and support state and local planning efforts.**

Maine's transportation infrastructure, including roads, bridges, culverts, and marine infrastructure, must be strengthened to ensure that the state is ready for climate-related events such as heavy precipitation and coastal flooding. Some communities are disproportionately impacted by these events because they have only one road in and out or because they depend on wharves and ferries.

The Maine Department of Transportation is developing a high-resolution flood-risk model that will help to identify infrastructure along Maine's coast that is most at risk from sea-level rise and storm events using a $1 million grant from the U.S. Department of Commerce. The Governor's Office of Policy Innovation and the Future is also studying the vulnerability of state-owned infrastructure to climate impacts using an $809,000 grant from the Federal Emergency Management Agency. Results from both studies are expected to be available in 2025. Through the Community Resilience Partnership (CRP), local communities can receive grants to identify the infrastructure that is most vulnerable to climate impacts.

Once vulnerable infrastructure is identified, the CRP and the Maine Infrastructure Adaptation Fund (MIAF) can help communities act. Since 2022, the MIAF has provided over $46 million in grants to communities to adapt critical infrastructure such as culverts and roads. Maine should continue to invest in resilient transportation infrastructure to ensure that communities are able to withstand and recover from climate impacts.

CULVERT SURVIVES RECORD STORM

In 2019, MaineDOT replaced a 6-foot diameter metal culvert with a 15-foot-wide box culvert on Route 2 in New Sharon. During the December 2023 storm, U.S. Geological Survey stream gages on the Sandy River recorded historic flooding levels, but this culvert survived without any noted damage and maintained the features that provide aquatic connectivity.

Seen after installation in Spring 2023 (above), and after weathering the December 2023 and January 2024 winter storms.

END NOTES

1 This includes both new and used car sales and cars registered in Maine from out of state; data from https://atlaspolicy.com/rechargemaine/ as of October 1, 2024

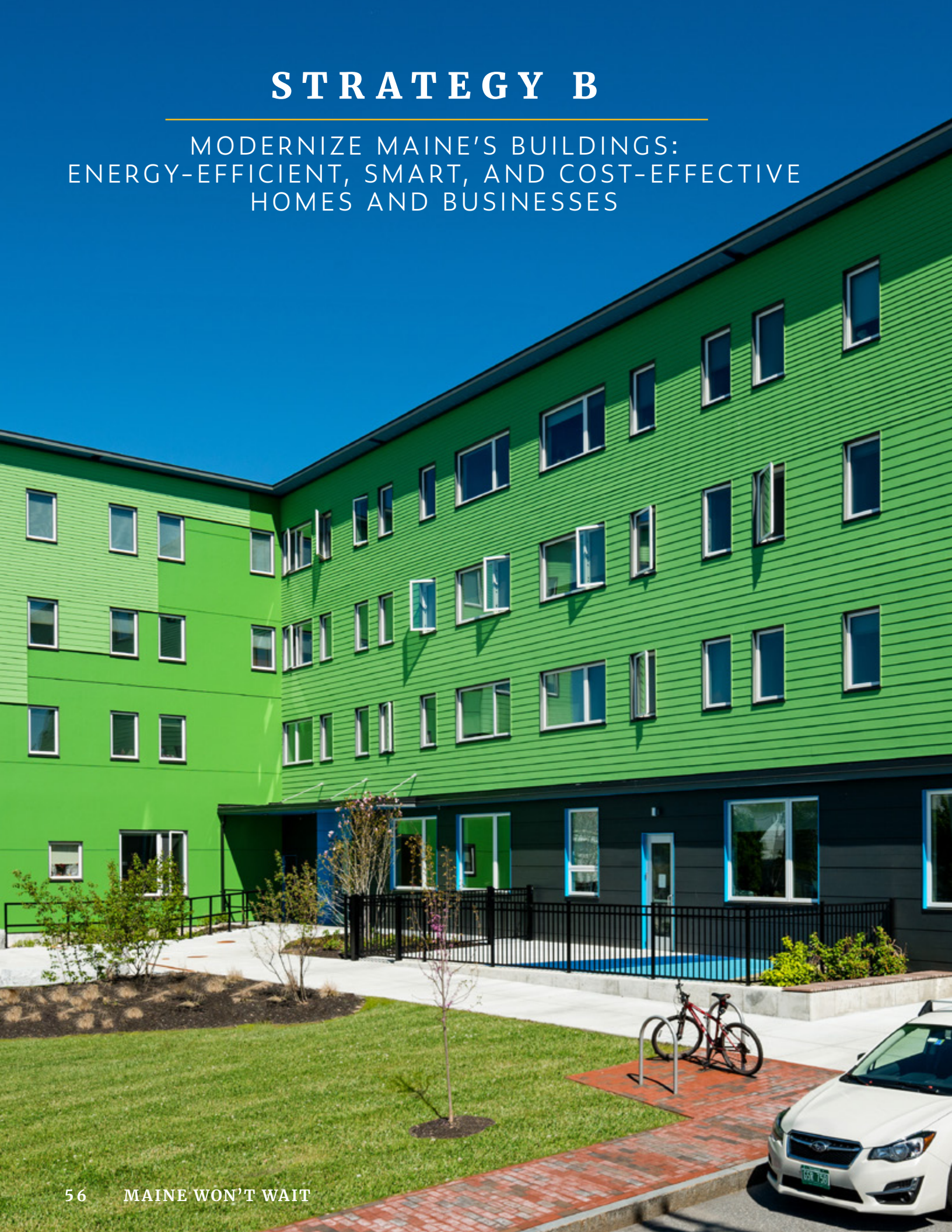
2 Maine Governor's Energy Office & Maine Governor's Office of Policy Innovation and the Future (2021). "Maine Clean Transportation Roadmap," pp. 15–16: https://www.maine.gov/future/initiatives/climate/cleantransportation

3 https://www.maine.gov/rechargemaine

4 Maine Department of Environmental Protection analysis using the US Environmental Protection Inventory State Inventory Tool in February 2024 (unpublished).

STRATEGY B

MODERNIZE MAINE'S BUILDINGS: ENERGY-EFFICIENT, SMART, AND COST-EFFECTIVE HOMES AND BUSINESSES



After transportation, Maine's building sector holds the most potential for achieving the state's emission-reduction goals. Heating and cooling of residential and commercial buildings contribute 31 percent of Maine's greenhouse gas emissions from fossil fuel combustion. Lowering these emissions and reducing energy costs will require modernizing our buildings to use cleaner energy, increasing energy efficiency, improving building resilience against climate impacts like heatwaves and extreme storms, and encouraging the use of more sustainable building materials.

These significant opportunities, however, are set against the backdrop of a nationwide housing shortage that has many people more immediately concerned about finding or keeping a roof over their heads than reducing emissions. Increasing the supply of homes is critical to addressing this shortage in Maine. Safe, comfortable, climate-ready housing will become a growing part of the solution, provided that Maine continues to put energy-efficient homes within reach for more people through understandable, accessible incentives and continued investment in affordable housing.

Maine has already taken great strides to reduce emissions from buildings and save on energy costs, with the state now leading the nation in the installation of highly efficient heat pumps for heating and cooling. In 2023, Maine surpassed its original goal of installing 100,000 new heat pumps by 2025. Heat pumps are up to three times more efficient than oil boilers and can provide efficient heat with outdoor temperatures as low as negative 22 degrees Fahrenheit. Across the state, many Maine homes are using heat pumps as their sole heating source while also benefiting from the use of heat pumps for cooling in the summer. Maine has also set targets for home weatherization to maximize this strategy while improving the safety and comfort of homes.

Energy-efficient buildings powered by clean energy and designed with lower-carbon materials, such as Maine-based wood products, are safer, healthier, more comfortable, more affordable, more resilient to extreme weather, and produce fewer greenhouse gas emissions. As state and federal investments spur progress toward—and beyond—the building targets established in *Maine Won't Wait* in 2020, Maine people are experiencing these many benefits.

Still, Maine must do more to bring these benefits to all residents. Low-income Maine households spend roughly 20 percent of their income on energy, compared to 4 percent for all Maine households. To meet Maine's climate goals, weatherization and heat pump incentive programs should continue to expand to reach more Maine people, with special efforts to engage low-income and underserved households and communities, especially those with the greatest energy cost burdens.

PROGRESS SINCE 2020

Adopting Heat Pumps

In 2023, Maine surpassed one of the major goals of the first climate action plan, which was to install 100,000 new heat pumps by 2025. In response to that achievement, Governor Mills set an ambitious new target of installing 175,000 additional heat pumps by 2027.

From 2022 to 2023, Maine saw a 6 percent decline in the share of households reliant on oil as their primary heat source—the largest yearly drop since at least 2010—to 52.5 percent of Maine households. Even so, Maine remains the most heating oil-dependent state in the country, making us distinctly vulnerable to increased fossil fuel prices and volatility. Maine will continue to help residents and businesses adopt highly efficient heat pumps as well as heat pump water heaters and insulation, which can make Maine homes safer, healthier, more comfortable, and more affordable while reducing greenhouse gas emissions. New rebates and tax credits from the Inflation Reduction Act, building on state rebates from Efficiency Maine, are further helping to reduce Mainers' dependence on fossil fuels.

White House National Climate Advisor Ali Zaidi (center left) joins Maine Community College System President David Daigler and Governor Mills in July 2023 to announce Maine's 100,000 milestone at heat pump workforce lab at Kennebec Valley Community College.

Implementing Appliance Standards

In 2022, the Maine Department of Environmental Protection (DEP) finalized a new rule that establishes minimum energy efficiency and water conservation standards for certain appliances, products, and fixtures. The standards took effect on January 1, 2023, helping to reduce energy demands, greenhouse gas emissions, and other pollutants while saving consumers money.

Sunsetting Hydrofluorocarbons

The Maine DEP finalized regulations to phase down the use of hydrofluorocarbons (potent greenhouse gases used in refrigeration), air conditioning, aerosols, and other applications. The prohibition on certain end uses began to take effect on January 1, 2022.

Incentivizing Cleaner Fuels

The state has established a thermal renewable energy credit program to incentivize efficient heating and cooling installations. In 2021, the Maine Legislature established the Thermal Energy Investment Program to provide incentives and low-interest or no-interest loans to strengthen the state's forest products industry and lower energy costs by increasing the efficient use of thermal energy production.

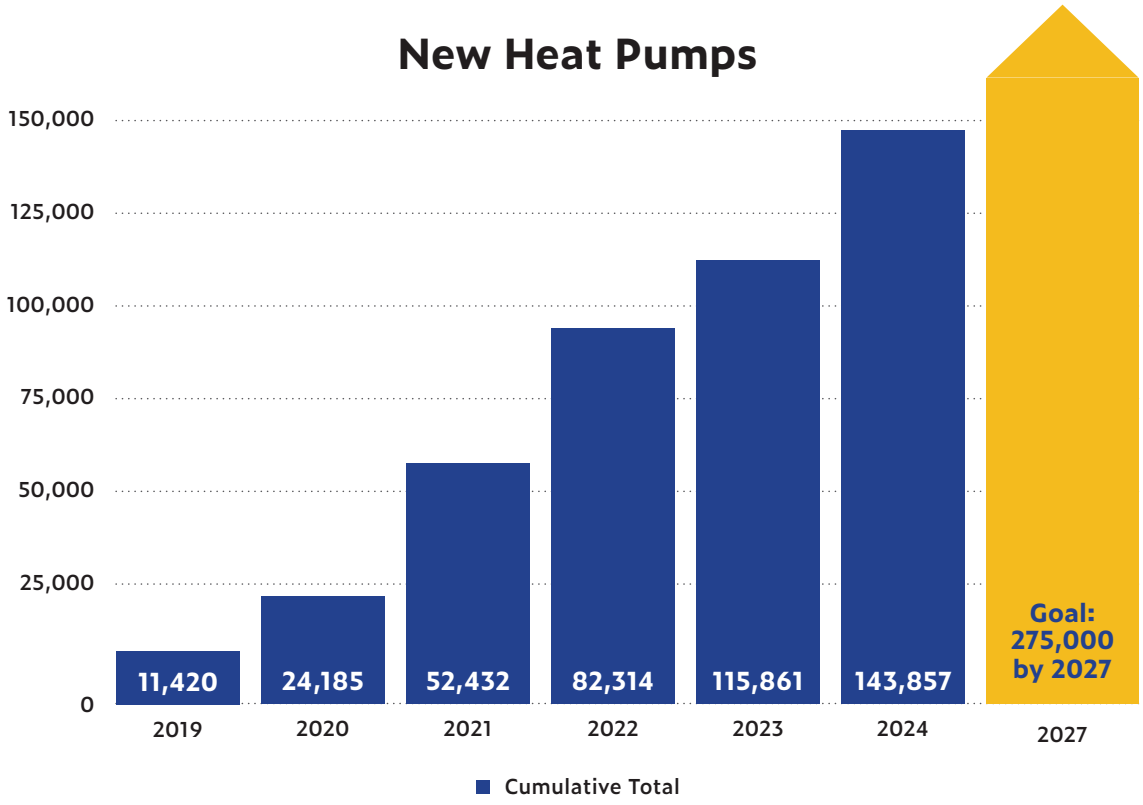
Advancing Efficient New Affordable Housing

The Maine Legislature passed a requirement that new affordable housing funded by MaineHousing, starting in 2024, be built to a highly efficient energy standard, rely primarily on electrified heating, and be ready for both clean energy and electric vehicle charging opportunities.

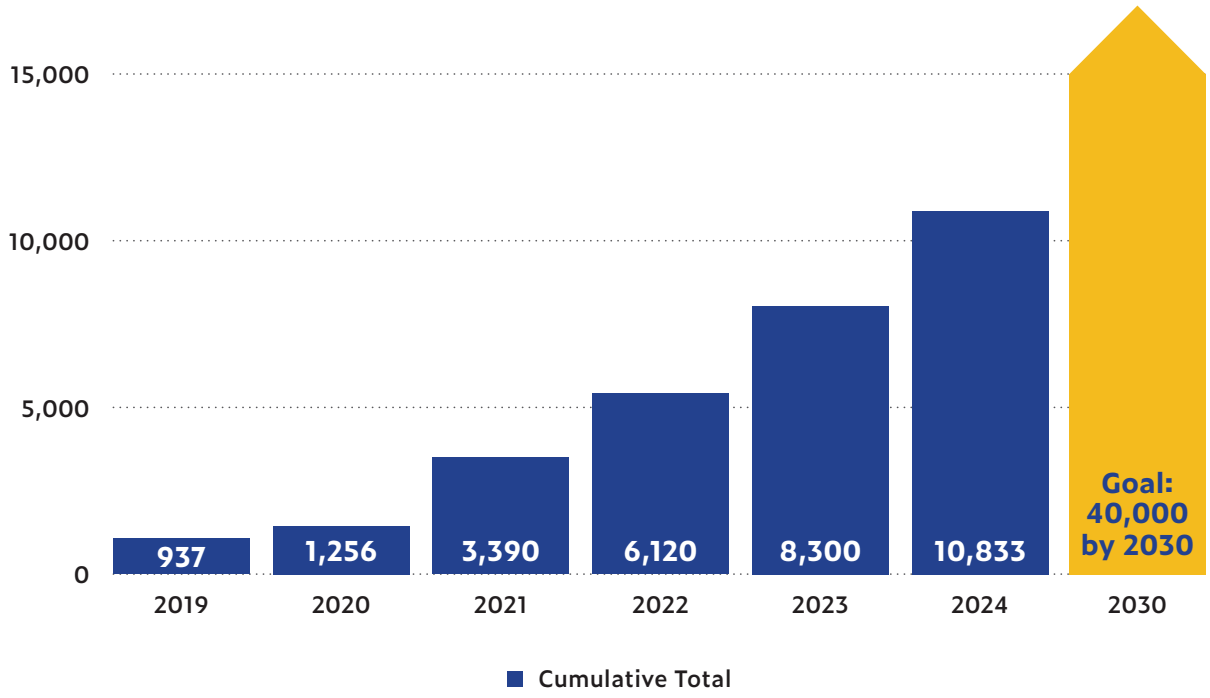
Setting Strong Building Standards for Maine Schools

The Maine Department of Education has adopted the highest international building standards for school construction. The International Energy Conservation Code (IECC) 2024 "stretch" building requirements for Maine school construction include Passive House envelope standards, solar-ready electrical design, and eligibility for Leadership in Energy and Environmental Design (LEED) certification. These requirements make recently constructed Maine schools some of the healthiest, most energy efficient in the country. Long-term cost savings projections from the investments will also aid school districts in balancing budgets and maintaining reasonable tax burdens.

New Heat Pumps



New Heat Pumps: Low-Income



Source: Efficiency Maine & MaineHousing. Note: Efficiency Maine's reported numbers are aggregated to their fiscal year which runs from July 1 of the previous year to June 30 of the stated year. MaineHousing's reported numbers are based on a given calendar year.

Many businesses, schools, and other public buildings in Maine have outdated heating and cooling systems and leaky building envelopes. Modernizing these buildings will improve comfort and air quality while saving taxpayers and employers money on energy costs. Targeted programs for different building types can help overcome financial and other barriers to making much-needed improvements.

1

Advance progress making homes and businesses more energy efficient by investing in weatherization and heating systems

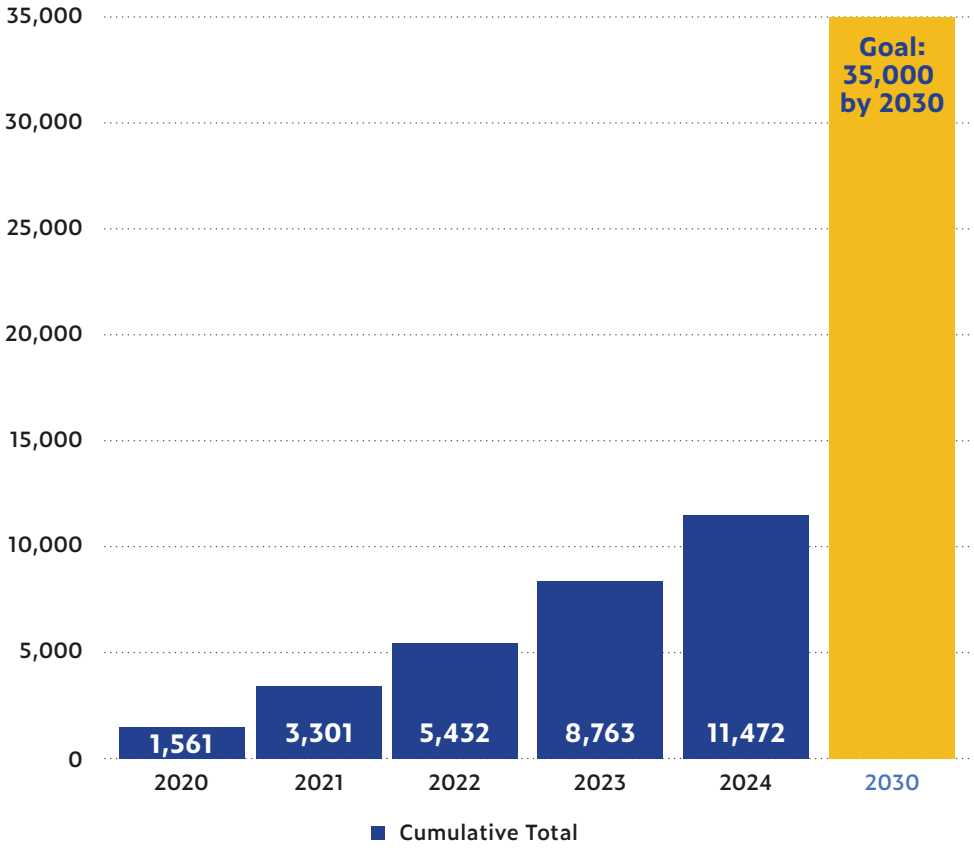
- **Install 175,000 additional highly efficient heat pumps in Maine homes and businesses by 2027, including 40,000 in low-income homes by 2030. Ensure that by 2030, 130,000 Maine homes are heated partially by heat pumps and 116,000 homes are fully heated by heat pumps.**
- **Weatherize 35,000 homes by 2030, including 10,000 low-income homes.**
- **Boost efficiency in commercial and institutional buildings through high-efficiency electric heating and water heating systems, building control technologies, and improvements to building envelopes.**
- **Extend funding and financing for weatherization, heat pumps, heat pump water heaters, and heating assistance in homes and businesses beyond 2030, including home repairs needed to make homes ready for weatherization.**
- **Accelerate participation in energy efficiency programs for renters and low-income and rural residents.**
- **Provide robust information about the benefits of energy-efficient appliances, clean energy, and weatherization, including through partnerships with community-based organizations that work with underserved populations.**
- **Provide owners of residential buildings that use electricity for space and water heating the same sales tax exemption that exists for heating with oil, coal, and wood.**
- **Continue to participate in regional initiatives to promote the replacement of fossil fuel-fired water heaters with heat pump water heaters.**
- **Study the benefits and costs of thermal energy networks and decarbonized "district heat."**

Even with significant progress in weatherizing homes and installing highly efficient heating and water heating systems, Maine remains the most heating oil-dependent state in the country. Continuing to increase the use of heat pumps will generate even more energy and carbon savings for Maine homeowners and businesses. Efficiency Maine estimates that a typical Maine home in 2024 can save more than $1,000 per year using whole-home heat pumps compared to an oil heating system.[1]

Weatherization and heat pumps have benefits beyond energy savings and reduced greenhouse gas emissions, including more comfortable homes and improved indoor air quality. Many people in Maine live in old or unsafe buildings that need significant work before they can qualify for weatherization programs such as the Weatherization Assistance Program administered by MaineHousing. Maine should identify ways to expand the severely limited funding for "pre-weatherization" repairs that are necessary before weatherization to ensure these homes are not left behind in the transition to more efficient buildings.

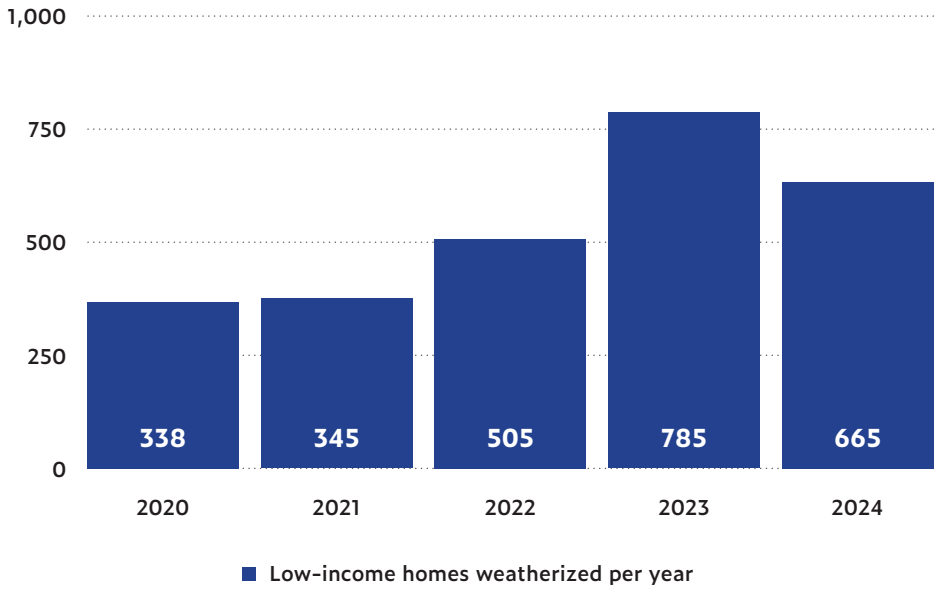
To meet the goals for low-income heat pumps and weatherization, the state must expand access and participation by low-income households and renters through targeted rebates that offer higher amounts for these groups. The combined efforts of Efficiency Maine and MaineHousing have already installed more than 10,000 heat pumps in low-income households and weatherized 2,600 low-income homes since 2019. To reach the new goals of 130,000 partial home heat

Homes Weatherized



Source: Efficiency Maine & MaineHousing

Homes Weatherized per Year: Low-Income



Source: Efficiency Maine & MaineHousing. Note: Efficiency Maine's reported numbers are aggregated to their fiscal year which runs from July 1 of the previous year to June 30 of the stated year. MaineHousing's reported numbers are based on a given calendar year.

pumps, 116,000 whole-home heat pumps, and 35,000 weatherized homes by 2030 will require sustained funding for both low-income and market-rate rebates.

Reaching the 2030 goals for heat pumps and weatherization will require robust education and outreach, including by Efficiency Maine, MaineHousing, the Governor's Office of Policy Innovation and the Future, the Governor's Energy Office, and many on-the-ground partners, including community action agencies. Community-based organizations and municipalities can play a role in helping people understand what tax credits and incentives they qualify for and how to access them. The state should partner with local organizations that have existing relationships and communication channels with residents who are harder to reach because of language barriers, lack of internet access, or other factors.

Maine should adopt fairer tax policies that reflect the growing importance of heat pumps and ensure that homeowners are not penalized for using electricity for heat. Since the purchase of coal, wood, and oil used to heat residential buildings is exempted from state sales tax, Maine should apply the same tax exemption to electricity that is used for space and water heating in homes.

Federal Funding Accelerates Momentum on Clean Energy and Efficiency

Maine has invested significant federal funding to continue our progress on weatherization and heating systems. Efficiency Maine expanded its low- and moderate-income weatherization and heat pump offerings with $25 million from Governor Mills' Maine Jobs and Recovery Plan, which has helped to weatherize 2,015 low- and moderate-income households since 2021.

MaineHousing received $30 million from the Bipartisan Infrastructure Law to supplement its existing Weatherization Assistance Program. MaineHousing has already started offering incentives for the weatherization of affordable multifamily properties through this program.

Through the U.S. Department of Energy (DOE) Home Energy Rebate and Home Electrification and Appliance Rebate programs, Maine is using the first $35 million out of a total of $72 million to install highly efficient heat pumps in affordable housing, manufactured homes, and multifamily buildings. This funding, managed by the Governor's Energy Office and administered by Efficiency Maine, will incentivize low-income residents to retrofit heating systems to replace fossil fuel systems with heat pump technologies.

The Greenhouse Gas Reduction Fund (GGRF) is a $27 billion national investment created by the Inflation Reduction Act to expand financing for energy efficiency and carbon reduction projects. Several Maine entities expect to boost their loan offerings using GGRF funds, including Efficiency Maine, MaineHousing, the Genesis Community Loan Fund, and Coastal Enterprises, Inc. GGRF also includes $62 million for the Solar for All program, which the Governor's Energy Office will use to help low- and moderate-income households to access solar energy.

Another $10 million grant from the U.S. DOE Energy Improvements in Rural or Remote Areas program will support the installation of up to 675 heat pumps in manufactured homes in smaller communities to replace fossil fuel heating systems. Efficiency Maine estimates that each home participating in the program will reduce household heating costs by 40 percent.

Through the U.S. Environmental Protection Agency Climate Pollution Reduction Grant program, Maine and four other New England states will receive a total of $450 million to accelerate the adoption of heat pump technology in residential single-family homes and multifamily buildings across the region. Maine's share of the award is estimated to be between $45 million and $72 million.

CORY FALABELLA

HELPING NEIGHBORS KEEP WARM AND SAVE MONEY

For nearly all his life, Cory Falabella, 35, worked either for himself or for family members, outdoors, on the ocean, and in all kinds of conditions — just as many of his family members did before him.

But now, instead of working outside in the weather, Falabella helps people weatherize their homes in Downeast Maine with Downeast Community Partners, thanks to funding from the Clean Energy Partnership (CEP) program through the Governor's Energy Office. Downeast Community Partners also recently received $1.9 million from the U.S. Department of Energy to continue their work to develop a robust weatherization workforce in Washington County.

"If it's too cold outside now, I'm working in an office," he said. "I've never experienced that before."

Falabella's journey to become a Certified Energy Auditor and Quality Control Inspector with Downeast Community Partners started with CEP training listed on an online job board.

"I've never had a job in my life," he said. "I've always worked for family or myself, so I had no references." But after his initial inquiry, he was impressed by his future boss, Dale Basher, and decided to give it a try.

Basher, Director of Housing Services at Downeast Community Partners, couldn't be happier that Falabella took a chance with them.

"Cory was a lobsterman in Downeast Maine, and climate change directly impacted his family. It's these types of personal experiences that allow Cory to view his community through a different lens."

Cory's new career path as an energy auditor has allowed him to reduce the impacts of climate change by reducing residential carbon dioxide emissions from heating fuel combustion, Basher said.

"He's also impacting the effects of poverty by reducing energy costs for Maine's most vulnerable populations. We believe this is what the Governor's Climate Action Plan *Maine Won't Wait* is all about."

Falabella began his training in March 2023 with nine other new employees as part of the Washington County College Apprenticeship Program and was the top performer, completing hundreds of competencies to complete seven certifications and two licensing requirements.

Today, he goes fishing for fun with his daughters, ages 12 and 14. His lobster boat is still in the water, but his job now is focusing on home weatherization, auditing of homes for efficiency, and final inspections, all of which help his clients save money on energy costs.

"I feel lucky because I really like this job," he said. "I told my wife I kind of hit the lottery when I got it."

But for Falabella, it's bigger than that — it's also about making sure he's diligent in his work and performing quality inspections.

"You have people's lives in your hands," he said. "It's about keeping people safe."

In addition to incentives, rules and standards can help ensure that Maine's buildings contribute to clean air and a healthier climate. Maine should continue to work with other cross-state initiatives, including the Ozone Transport Commission and Northeast States for Coordinated Air Use Management, to develop standards that limit emissions from water and space heating. Other states are investigating a type of heating system called thermal energy networks, also known as "district heat" or "networked geothermal," which uses a heating source, such as waste heat from industry or geothermal heat from the ground, to heat multiple buildings at once, such as a neighborhood or a university campus. Maine should study the benefits of thermal networks and explore options to deploy them in locations where they are cost effective and feasible.

2

Build and renovate more housing that is affordable, energy efficient, and close to vibrant community centers

- **Retrofit and build 1,500 energy-efficient affordable housing units per year.**
- **Promote compact development near community services and transit, consistent with the land use goals in Strategy F.**
- **Create new incentives to encourage the purchase of manufactured homes that meet the new U.S. Department of Energy (DOE) Zero-Energy Ready Home (ZERH) standards and replace old or substandard housing.**
- **Take steps to bring the benefits of investments in energy efficiency and clean energy to renters.**

In every corner of Maine, in urban and rural communities alike, the housing shortage is pervading residents' daily lives, impeding businesses' recruitment efforts, and challenging local officials. With housing often hard to find and afford, energy efficiency can take a back seat as individuals and families struggle to meet this basic need.

The Snow School Project in Fryeburg is an example of housing retrofits helping to upgrade and expand Maine's existing housing stock to meet growing demand.

The 2023 State of Maine Housing Production Needs Study found that Maine needs approximately 38,500 homes to meet current needs and will need an additional 37,900 to 45,800 homes to meet expected population growth and household change by 2030. A significant portion of these homes must be affordable to low- and moderate-income Mainers. As the state seeks to increase available housing, it should support coordination among state agencies, local governments, and the private sector to ensure that new affordable housing is built to progressively stronger standards of energy efficiency and uses electric heat pump technology to reduce operating costs and greenhouse gas emissions. Already, MaineHousing, for example, requires new low-income housing developments to meet high energy efficiency standards, such as Passive House certification or similar.

At the same time, the state should retrofit aging and inefficient affordable housing through weatherization, high-efficiency heating systems, and renewable energy. New federal funding provided through the Weatherization Assistance Program, the U.S. Department of Energy Home Energy Rebate programs, the Greenhouse Gas Reduction Fund, and Solar for All can support these efforts.

The U.S. Department of Energy's Zero-Energy Ready Home standard for manufactured homes provides an opportunity for homebuyers to purchase their own energy-efficient electrification-ready homes or to replace old and inefficient homes with new ones that are affordable and highly efficient. This is important because many Mainers live in old or low-quality housing that presents health and safety risks and can't be retrofitted to be more energy efficient. Maine should provide incentives to replace the oldest and poorest quality homes with this type of home, which is safe, comfortable, efficient, and affordable.

Though renters don't own the buildings they live in, they can still benefit from energy efficiency and clean energy investments. Programs like the forthcoming Solar for All program designed to benefit low-income households could help enable new mechanisms to share the financial benefits of solar energy between landlords and tenants, even in buildings where tenants do not directly pay an electricity bill. The state can also ensure that renters are aware of opportunities to save on energy costs, such as switching to LED lighting.

3

Establish strong systems to support rapid adoption of and compliance with increasingly climate-friendly building codes and standards

- **Commit to timely adoption of and robust training on new building codes to reach net-zero carbon emissions for new construction in Maine by 2035, with the interim goal of defining a pathway to reach net-zero emissions codes by 2028.**
- **Move responsibility for building code adoption, compliance, and training from the State Fire Marshal's Office to the new Maine Office of Community Affairs (MOCA).**
- **Support contractors and code enforcement officers through training and technical assistance, particularly in small and rural communities, and evaluate the benefits and feasibility of contractor certification or licensing in establishing a consistent level of education and compliance with Maine's energy code across the building community.**

AVESTA Housing Builds Porter Station for Resilience

AVESTA Housing built Porter Station, a 60 unit affordable apartment building in Portland, using the latest in sustainable design and construction to decrease the building's carbon footprint, maximize energy efficiency, and improve indoor air quality.

Residents of the mixed-income building include young professionals, blue-collar workers, retirees, recent immigrants, lifelong Maine residents, and more. Homes range in size from efficiencies to three-bedroom units, and residents have access to a community room, indoor bicycle storage, and a covered parking garage with electric vehicle charging stations.

"AVESTA is a strong proponent of high-performance buildings that address resident comfort, are weather resistant, and have built in resiliency," said AVESTA's Todd Rothstein. "We look forward to the future and appreciate the support Maine offers."

Porter Station is a community of 60, non-age-restricted, quality, affordable homes for individuals and families in the St. John Valley neighborhood of Portland's peninsula.

MARIANNA CASAGRANDA

HEAT PUMPS AT WORK IN MOBILE HOMES

When Marianna Casagranda purchased her 905-square-foot manufactured home in January 2021, located in the Wardtown Mobile Home Cooperative community in Freeport, it was already set up with a propane heating system—but not for long.

"I have been interested in alternative housing, alternative heating, and alternative ways of living for a long time. So, when I became a homeowner for the first time, I wanted to make sure that I got a heat pump," she said.

She was part of an Efficiency Maine grant program in 2021 to pilot and study heat pump use in manufactured homes and determine its viability. In exchange for a new highly efficient heat pump installed in her home, she agreed to allow Efficiency Maine to collect energy data to measure its efficiency.

The heat pump was installed mid-winter, and she noticed a difference right away. "What a transformation that was on so many levels. While people may be driven by ethical choices or ecological choices, they're also going to be driven by economy and the numbers and the money."

She says she can keep her home warm easily and much more affordably now, something she struggled with in rental homes she previously occupied that had other forms of heating.

"During the days when we had the 15-below temperatures, my house was fine. I was comfortable. The heat pump worked beautifully through all of that."

Later, a couple considering a similar system for their planned manufactured home in a nearby town contacted her, wanting to learn more.

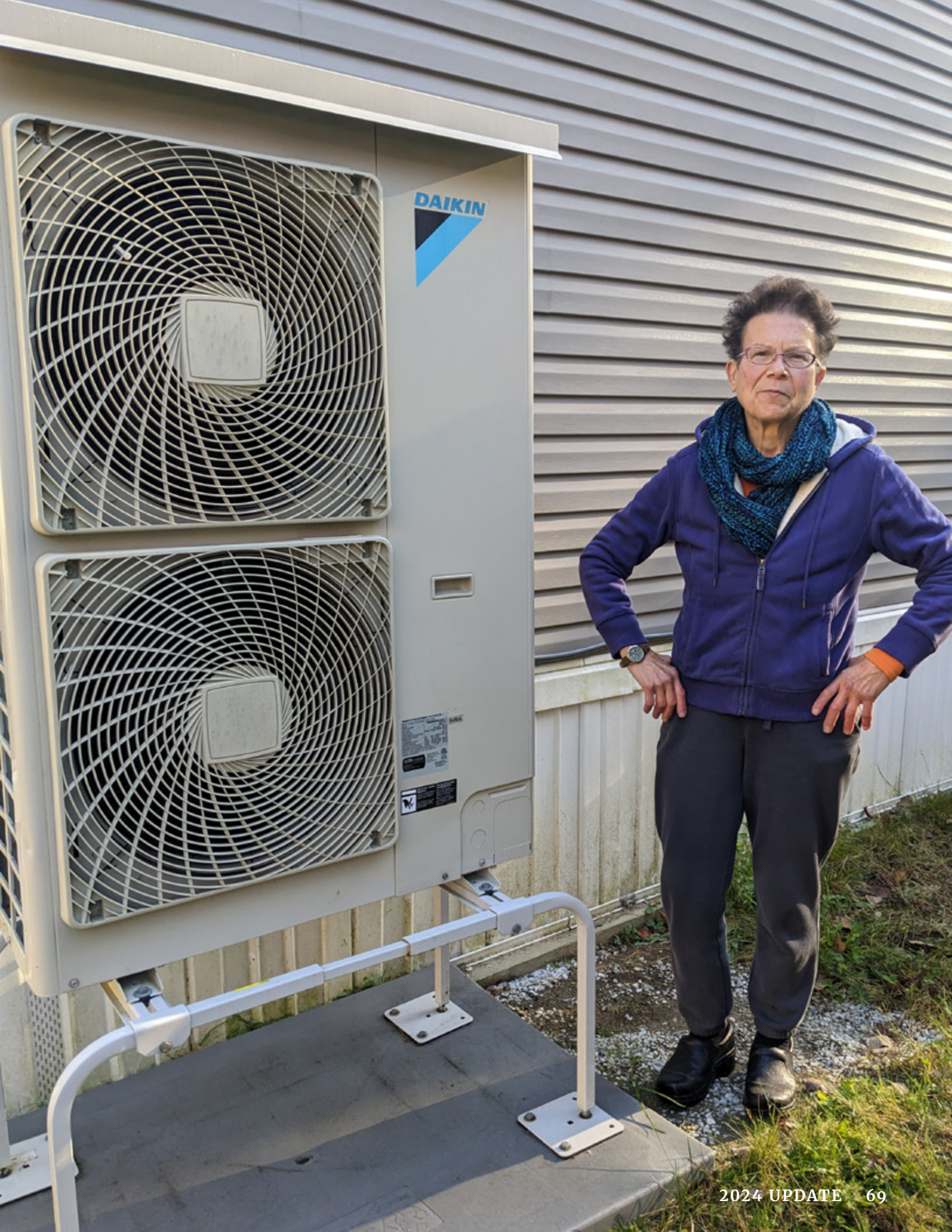
"One of the concerns was noise because you're living in it every day," she said. "In manufactured homes, the furnace unit, while not physically large, makes a lot of noise."

She invited them over to hear for themselves.

"When they walked in, I turned the thermostat up a few degrees more than I normally do. They stood there, like, 'That's it? . . . That's the noise?' I said, 'Yeah, that's the noise,' and they were just dumbfounded."

Just seeing the presence of the outdoor fans has sparked curiosity in her community, and it's catching on—two of her neighbors are now getting heat pumps.

"I just smile because I think, you know, this is the ripple effect in a local way, but it has a big impact."


DAIKIN

Timely adoption and implementation of updates to building codes can lead to safer, more efficient, and more resilient buildings for Maine residents and businesses. Maine is well on the way to modernizing building codes, having approved the 2021 International Energy Conservation Code (IECC), the latest version. The IECC is amended every three years, and with each new version, more efficient materials, technologies, and techniques are specified in the code. Beginning in 2027, Maine should commit to adopting the new base code every three years. As the building community more closely adheres to increasingly energy-efficient, climate-friendly codes and standards, Maine will see more new buildings reach net-zero emissions. In the meantime, Maine should also define a pathway to a building code that meets net-zero emissions standards and aims higher than the base code for building energy performance requirements.

Staying up to date on building codes will require coordination among the state, regional, and local governments, and builders. The new Maine Office of Community Affairs (MOCA) will provide coordinated and efficient planning, technical assistance, and financial support to communities to better plan for challenges, pursue solutions, and create stronger, more resilient Maine communities. Provided that it receives adequate personnel and funds, MOCA, in coordination with the Governor's Energy Office, should assume responsibility for the support of building and energy code adoption, training, and compliance.

To support the community of builders and municipal officials who ensure that new buildings meet code requirements, the state should offer frequent and geographically diverse trainings in the latest building codes. In particular, the state should dedicate additional resources to code training and outreach in smaller and rural communities. In addition to training for code enforcement officers and contractors, MOCA should evaluate the benefits and feasibility of contractor certification or licensing to establish a consistent level of education and code compliance across the building community. The state can also support rural communities in adding code enforcement capacity, either through agreements among multiple towns or third-party inspectors. Funding for these efforts may be available through new, competitive federal funds available for code adoption and implementation from the U.S. Department of Energy and the Federal Emergency Management Agency.

3D-Printed BioHome Made with Recycled Forest Products

The University of Maine Advanced Structures and Composites Center unveiled BioHome3D, the first 3D-printed house made entirely with bio-based materials. MaineHousing, the Maine State Housing Authority, is a partner on the project.

"The idea that we can create housing units in a fraction of the time with a fraction of the workforce — that is an efficiency that we've never experienced before. It's going to stretch our precious state and federal resources exponentially, and most importantly, provide — quickly — for those most in need in our state," said Daniel Brennan, Director of MaineHousing.

4

Promote the manufacture and use of climate-friendly building products

- **Building on Maine's designation as a federal Tech Hub for Forest Bioproducts and the efforts of the FOR/Maine initiative, identify and address the barriers to attracting a cross-laminated timber (CLT) plant and other future bio-based materials manufacturing in Maine.**
- **Use demonstration projects and incentive programs to help bring costlier low-embodied carbon (e.g., wood and bio-based) building products closer to the price of high-embodied carbon (e.g., steel and cement) building products.**
- **Increase awareness and education and provide technical assistance to support the use of building materials that have low-embodied carbon, including techniques for measuring carbon emissions over a building's lifetime, and promotion of low-carbon building materials for municipalities and larger institutions, especially those made in Maine. Divert construction and demolition debris from landfills by encouraging municipalities to provide at least two weeks of public notice for permitted demolition projects so people can salvage reusable building materials.**

Globally, the carbon that is generated through the manufacture, use, and disposal of building products, known as "embodied carbon," is responsible for 11 percent of energy-related carbon emissions.[2] Maine can reduce embodied carbon emissions by switching to lower-carbon alternative building products, such as wood-fiber insulation and structural timber, and by designing buildings to be deconstructed and reused rather than demolished and discarded. Many of these alternative products could be sourced and manufactured in Maine, supporting good jobs in communities with a strong legacy of forestry and manufacturing.

The Maine Technical Codes and Standards Board in 2021 voted to amend the state building code to allow mass timber construction, including CLT, up to 18 stories tall. Maine should identify the barriers to attracting production of CLT and other types of mass timber to Maine, which will allow sustainable timber to be sourced in-state and replace high-carbon products such as cement and steel in many buildings.

The state should educate consumers, developers, and building owners about the availability and benefits of climate-friendly building materials, especially as technologies improve and costs go down. As energy efficiency in buildings continues to improve, building owners and developers will be looking for additional opportunities to reduce emissions and save money.

In the early stages of adoption, while the costs of climate-friendly building products may be higher than conventional building products, incentives may be needed to encourage builders and developers to use these alternatives. Maine can demonstrate the benefits of these materials by using them in pilot programs and by using existing incentive programs, such as insulation rebates through Efficiency Maine, to encourage the use of climate-friendly building products. The state should investigate the feasibility of phasing out high-carbon materials from current and future incentive programs.

Wood-fiber insulation products like these, made by TimberHP, provide sustainable alternatives to traditional building materials.

5

Accelerate cleaner technologies in industrial processes

- **Consider pilot and demonstration projects on the use of industrial heat pumps for low- and medium-temperature industrial processes and evaluate the potential for market-driven incentives.**
- **Scale up market-ready technologies such as membrane filtration in food production.**
- **Continue to support traditional energy efficiency upgrades with increased attention to small- and mid-sized facilities.**
- **Maximize state support for federal grant funding opportunities to help industrial facilities move towards clean and renewable technologies.**
- **Maximize facilities' participation in cost-effective demand management, including the use of behind-the-meter batteries and thermal energy storage.**

The industrial sector in Maine represents 10 percent of carbon emissions from the burning of fossil fuels. *Maine Won't Wait* in 2020 recommended the creation of an Industrial Innovation Task Force, which has since brought together industry and stakeholders to explore increasing industrial efficiency, new technologies and processes for reducing greenhouse gas emissions, and funding sources to support these projects. Maine should continue to support traditional energy efficiency improvements at industrial facilities, such as heat recovery and variable-frequency drives, as well as scale up emerging technologies such as industrial heat pumps, membrane filtration in food production, batteries, and thermal storage. Federal funding opportunities can help industrial facilities move towards clean and renewable technologies.

Several emerging technologies show promise for continuing to improve efficiency in industrial settings. Industrial heat pumps are large water-to-water or air-to-water heat pump systems that can generate steam using waste heat (or waste hot water). Heat pumps can also be combined with thermal storage, electric boilers, or batteries to generate industrial process steam. A new generation of heat pump technology is emerging that may be able to cost-effectively make steam even in the absence of an existing thermal source.

Achieving deep emissions reductions in this sector by 2050 will likely require significant shifts away from petroleum-based fuels toward cleaner alternatives. Some fuel-switching opportunities can be both cost effective and reduce greenhouse gas emissions, such as converting from oil to natural gas and increasing efficiencies through combined heat and power (CHP) technologies. In the future, fuel-switching could include transitions to green hydrogen and other innovative energy sources.

Town of Lamoine: Keeping Students Cool and Saving Money with Heat Pumps

The Town of Lamoine received a $50,000 Community Action Grant from the Community Resilience Partnership in the fall of 2022 to install a solar array on its sand and salt shed and install a total of 26 heat pumps in its consolidated school, town hall, and fire station. Lamoine Select Board Chair and Conservation Commission Chair Larissa Thomas reports that the new technologies will pay significant dividends to town residents over the years. In addition, the school was able to stay open to students during a heat wave at the beginning of the school year by using the heat pumps for more effective cooling, showing that these updates not only improve energy efficiency but also the town's resilience and ability to support its youth and other residents.

6

Continue to lead by example in publicly funded buildings

- **Capitalize a school loan fund and support incentives and grants to advance the work of the new Green Schools Program at the Maine Department of Education to reduce energy costs in Maine's 600 school buildings through the installation of zero-emissions heating and cooling technologies and renewable energy.**
- **Enhance grant and loan programs and technical assistance to support efficiency and renewable energy programs in municipal and tribal government owned buildings.**
- **Ensure that all new state-owned buildings and major renovations use zero-emissions heating, cooling, and water heating sources, are compliant with the most recent energy codes or "stretch" codes, and that major parking-related renovations and new builds at state-owned buildings include "Electric Vehicle Ready" parking spaces.**
- **Require that by 2030, commercial and state-funded construction projects that meet certain thresholds (embodied carbon, structure size, etc.) be designed for deconstruction and reuse and sourced from reduced carbon materials.**
- **By 2034, reduce greenhouse gas emissions from existing state buildings by at least 50 percent.**

Energy is a significant cost for state and local taxpayers who fund Maine's more than 600 school buildings. Maine already requires schools that receive state aid for construction adhere to International Energy Conservation Code standards. By improving energy efficiency, schools can reduce greenhouse emissions, reduce operating costs, and improve students' learning environments through improved air quality. The state can support schools by providing technical assistance, state and federal funding, and learning opportunities for school administrators, teachers, and students. Capitalizing a loan fund and establishing ongoing support for the Department of Education's Green Schools Program will ensure the benefits of this program.

Since 2020, state and federal investments have boosted energy efficiency in municipal buildings, saving taxpayers money and reducing emissions. Using funds from the Maine Jobs and Recovery Plan, Efficiency Maine has completed 100 municipal heat pump projects, primarily in towns with fewer than 5,000 residents, as well as 28 projects in schools. The Community Resilience Partnership, a state grant program for municipal- and tribal-government climate and energy projects, has funded 99 energy efficiency projects in municipal facilities, including 71 projects in the state's smallest and socially vulnerable communities. The Inflation Reduction Act (IRA) established new pathways for tax-exempt entities like municipalities, schools, and nonprofits to receive tax credits for certain clean energy and clean vehicle investments. Moving forward, Maine should continue to help communities become more energy efficient and increase the use of renewable energy and storage to reduce costs, lower emissions, and improve resilience.

Thanks to significant federal funding for energy efficiency, transportation, and clean energy investments from the Bipartisan Infrastructure Law and the IRA, the state of Maine is positioned to continue leading by example in buildings owned or leased by the state. In 2024, Governor Mills issued an executive order that directs the state to commit to goals that put Maine on a pathway to decarbonize state buildings. The Governor's order also includes goals for electric vehicle charging stations, zero-emissions heating and cooling, and overall reductions in emissions and energy use in state buildings.

END NOTES

1 https://www.efficiencymaine.com/heat-pumps/

2 UN Environment and International Energy Agency (2017). *Towards a zero-emission, efficient, and resilient buildings and construction sector: Global Status Report 2017.* https://worldgbc.org/wp-content/uploads/2022/03/UNEP-188_GABC_en-web.pdf

These air cooled variable refrigerant flow high efficiency heat pumps are used to maximize energy use at the newly renovated Ray Building in Augusta.

Leading by Example in State Buildings

In 2024, the State of Maine's Ray Building, built in 1935, underwent a comprehensive renovation that gutted the interior, replaced all systems, upgraded the building envelope, added insulation, and improved drainage in the surrounding site. The new heating, ventilation, and air conditioning (HVAC) system for the Ray Building consists of high-efficiency air-source Variable Refrigerant Flow units, a type of heat pump system used for heating and cooling commercial buildings. This new HVAC system transitioned the Ray Building off a centralized fossil fuel-powered steam plant, reducing emissions by 43 percent, or 95,862 tons of carbon dioxide equivalent. Through ongoing investment in facility upgrades and renovations, the State of Maine continues to lead by example to reduce energy use, costs, and emissions.

STRATEGY C

TRANSITION TO CLEAN ENERGY

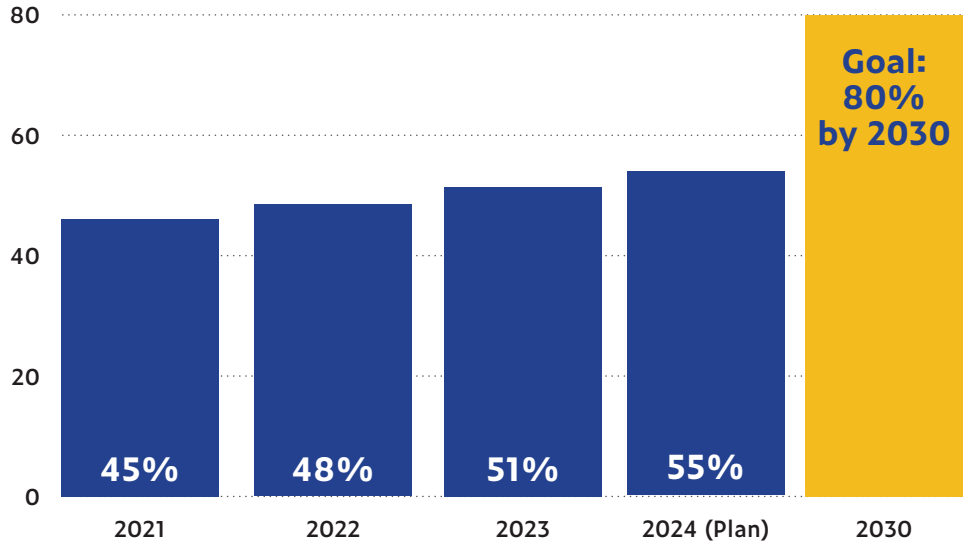
Maine's energy systems, like those around the world, are undergoing an unprecedented transformation. Driven by government policy and private sector innovation, clean energy technology costs are declining and clean energy is powering our homes and businesses in new and more efficient ways.

Maine has become a national leader in reducing greenhouse gas emissions from its energy sources by setting ambitious requirements for transitioning to renewable sources. In 2019, Governor Mills signed bipartisan legislation that set a requirement for Maine to use 80 percent renewable energy by 2030. In 2023, Maine crossed the threshold of using more than 50 percent of its electricity from renewable sources. Recognizing the progress made to date and the key role of clean energy in bringing down the cost of electricity for Maine people, protecting our environment from harmful carbon emissions, and creating good-paying jobs, Governor Mills announced a new accelerated goal of 100 percent clean energy by 2040.

Affordability of energy for Maine homes and businesses is a priority for this climate plan and must remain a priority as the plan is implemented. Maine has made great strides, but our dependence on oil to heat our homes and New England's continued overreliance on natural gas for electricity generation make us vulnerable to price swings caused by global events, such as Russia's invasion of Ukraine. When fossil fuel prices rise, Maine people and businesses experience higher electricity and heating bills.

Maine's reliance on fossil fuels means we spend billions of dollars that go to out-of-state and foreign oil and gas companies every year. Switching to clean, Maine-based power sources can reduce volatility and increase the predictability of energy costs.

Maine Renewable Electricity



Source: Govenor's Energy Office

"The time has come to be bolder: I am announcing tonight that I am directing my Energy Office to draft legislation requiring that 100 percent of our electricity come from clean energy by 2040. By accelerating our pace toward 100 percent clean energy, we will reduce costs for Maine people, create new jobs and career opportunities that strengthen our economy, and protect us from the ravages of climate change."

—GOVERNOR MILLS, STATE OF THE BUDGET ADDRESS, FEBRUARY 2023

Meeting Maine's new goal of 100 percent clean energy by 2040 and our emission-reduction goals will require innovation and improved systems. As Maine continues to electrify its cars, trucks, public transportation, homes, and businesses, electricity consumption is expected to more than double between now and 2050. Our electricity transmission and distribution systems, collectively called the "electric grid," must be ready to handle this transition while keeping energy costs affordable. Maine can harness powerful new technologies like artificial intelligence (AI) to help navigate complex grid management challenges while simultaneously preparing and planning for the increased electric load from the potential addition of data centers to Maine's landscape to support widespread AI usage.

Maine will also need to make the grid more resilient to climate impacts like severe storms, which have driven up costs for ratepayers in recent years. For many Maine people, especially those most vulnerable to storm impacts like older Mainers, multiday power outages can have significant safety and health impacts. Extended power outages impact Maine schools as well as households and businesses; this results in lost learning time and childcare disruptions, interference with academic and extracurricular engagement, and lost earnings and sales for workers and employers. Improving the reliability of the grid can improve the lives of Maine people while reducing emissions to meet our goals.

Maine can achieve its clean energy and climate goals while reducing energy burdens for Maine people through the thoughtful planning and build-out of clean energy infrastructure. We have the technology to increase efficiency and can reduce the costs of resilient energy infrastructure through innovative "demand management" strategies. And we can continue to build a clean energy workforce that offers local, good-paying jobs.

Maine's Renewable Portfolio Standard

Fifty-five percent of Maine's electricity is produced by renewable sources as a result of Maine's Renewable Portfolio Standard (RPS). This policy has delivered an annual average benefit of $21.5 million to electric ratepayers between 2011 and 2022, meaning that the price of electricity would have been higher without the RPS. This policy has also resulted in $100 million in direct investment, $900 million in operations and maintenance spending, and 1,000 full-time jobs yielding over $1 billion in worker income between 2008–2022.

1

Decrease energy burdens while transitioning to clean energy

- **Comprehensively analyze household energy burden in Maine in 2025, including all energy sources, and set a target for reducing the energy burden for low-income residents by January 2026.**
- **Expand financing and ownership models for Maine people and businesses to access clean energy and energy efficiency opportunities.**
- **Launch an energy coaches program to help low-income and underserved individuals and communities understand their options for meeting their energy needs through grants, rebates, or other incentives.**
- **Expand education and outreach for programs that increase access to clean energy.**
- **Adequately fund core energy assistance programs for low-income families.**

Energy burden is the percentage of household income spent on energy costs. Recent data from the U.S. Department of Energy indicate that low-income Maine households in 2022 spent roughly 20 percent of their income on energy, compared to 4 percent for all Maine households.

Many energy-burden analyses look at heating fuel costs but leave out other energy costs such as transportation, water heating, and secondary heating sources. A comprehensive energy burden analysis in Maine should include a full range of energy costs to help provide a more complete picture of Mainers' energy spending.

This will provide insights into the relative energy burdens of households that use electric appliances, vehicles, and heating compared to those that rely more on fossil fuels. It will also help ensure that Maine can target programs to help low- and moderate-income people reduce their reliance on the most expensive and price-volatile energy sources. This analysis, updated regularly, should be used to set a target and measure progress toward the goal of reducing the energy burden for low-income households.

Clean energy investments—such as energy efficiency, home electrification measures (heat pumps and heat pump water heaters), weatherization, renewable energy, and energy storage (including electric vehicle batteries that are used as storage)—can deliver long-term, meaningful solutions to reduce energy burdens. Clean energy investments will lower emissions and increase resilience, and they can be leveraged with new technologies to better manage electricity demand. The upfront capital costs of these investments, however, can deter households, businesses, school districts, and other entities. Other roadblocks to accessing the benefits of clean energy and energy efficiency investments include difficulties meeting basic needs, low credit scores, being a renter, lack of information or familiarity, or lack of trust in government programs.

The state and partners should develop and support expanded financing options and ownership models for clean energy investments, such as "Tariff On-Bill Financing," where utilities provide capital for the upfront cost of efficiency or clean energy installations at their home, which customers pay back over time through their electricity bill. Starting in 2025, Maine's federally funded Solar for All program will provide financial and technical assistance to enable low-income and underserved households across the state to access solar and energy storage. Significant tax incentives are also available through the Inflation Reduction Act to help homeowners access solar, storage, and electric vehicles and chargers.

Establishing an energy coaching program could improve access to energy assistance programs and state and federal funding opportunities. Navigators would help low-income and underserved people and communities understand their options for meeting their energy needs through grants, rebates, or other

incentives. Program designers and implementers should work with community-based organizations and tribal governments to ensure outreach efforts successfully reach underserved populations.

Maine should find ways to provide continued funding for energy assistance programs for low-income families, including both state and federally funded programs such as the Home Energy Assistance Program, Low Income Assistance Program, Weatherization Assistance Program, heat pump and weatherization programs at Efficiency Maine and MaineHousing, and Window Dressers.

Maine Wins $62M for Solar for All

On April 22, 2024, the U.S. Environmental Protection Agency (EPA) awarded Maine a $62 million grant to provide financial and technical assistance enabling low-income households across the state to access solar and energy storage. This award will also support workforce development opportunities ensuring quality clean energy jobs for underserved communities. As part of the EPA requirements for this program, participating households must receive a direct financial benefit equivalent to a minimum of a 20 percent reduction in the average monthly electricity bill for a residential customer of the applicable electric utility. Maine's Solar for All program intends to make pathways available for participation by renters and homeowners, including for buildings that may not be well-suited for on-site solar. The Governor's Energy Office expects that funding will be available through this program starting in 2025.

2

Plan and build the infrastructure to achieve a resilient and 100 percent clean electricity grid by 2040

- **Establish a regular schedule of competitive clean energy purchases to occur at least every two years.**
- **Invest in a sustainable, Maine-based offshore wind industry to position Maine as a leader in the industry.**
- **Improve, modernize, and expedite the process for connecting clean energy projects to the distribution system.**
- **Maximize the use of federal funds for priority clean energy infrastructure projects.**
- **Help communities plan for clean energy through new stakeholder-informed resources such as model ordinances and best practices for increasing energy resilience.**
- **Improve the efficiency, predictability, and transparency of state siting and permitting processes while providing meaningful public engagement opportunities.**
- **Plan for future grid needs at both the transmission and distribution levels, including growth and increased resilience to storm impacts, with input from Maine people, businesses, utilities, and other stakeholders.**
- **Continue to encourage highly efficient combined heat and power production facilities that can reduce emissions at industrial businesses and large institutions in Maine.**
- **Monitor and evaluate market trends and policies regarding clean fuels, including hydrogen and bio-based fuels.**
- **Examine how to align electricity-sector greenhouse gas emissions accounting consistent with regional best practices to continue driving increased clean electricity in Maine and across the regional electricity system.**

Maine Energy Policy Goals

Renewable Portfolio Standard

- 80% of electricity delivered in Maine to be renewable by 2030
- Supports new and existing resources including hydro, biomass, tidal, waste-to-energy, wind, solar

Offshore Wind

- Goal of 3,000 megawatts from the Gulf of Maine by 2040
- GEO to establish procurement schedule

Energy Storage

- Goal of 400 megawatts by 2030
- GEO to develop procurement for up to 200 megawatts

Distributed Generation

- Goal of 750 megawatts of distributed generation

Solar

- $62 million for Solar for All program to provide benefits of solar and storage to low-income Mainers
- Targeted procurement for solar on contaminated lands

Combined Heat and Power (CHP)

- Procurement of 30 MW of CHP through the Wood-fired Combined Heat and Power Program

Transmission

- Procurement of transmission line and generation to connect at least 1,200 MW of renewable energy in northern Maine

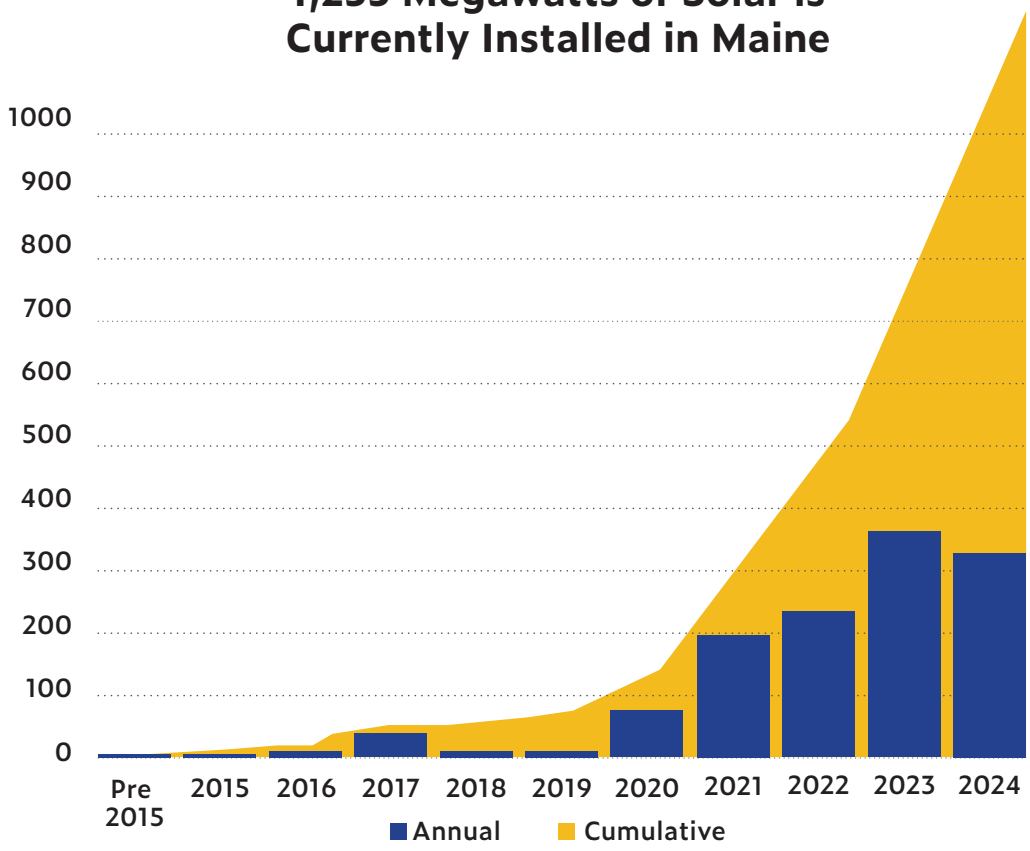
Oil Reduction

- 30% from 2007 levels by 2030 and by at least 50% from 2007 levels by 2050

Jobs

- 30,000 clean energy jobs by 2030

1,235 Megawatts of Solar is Currently Installed in Maine



Source: Governor's Energy Office. Data from Central Maine Power, Versant Power, ISO-New England, and other sources. Updated October 9, 2024.

In 2024, as required by Maine's Renewable Portfolio Standard, 55 percent of Maine's electricity came from renewable sources. Maine is fortunate to have access to a diverse set of resources for electricity production, including solar, wind, hydro, and biomass, as well as significant potential for new resources, including offshore wind and the technology needed to store clean energy.

New clean energy resources will help the state transition to a cleaner grid while managing costs and reliability.

The Maine Legislature has established targets for the use and purchase of clean energy in the state, including 3 gigawatts of offshore wind; 400 megawatts (MW) of energy storage; 750 MW of small-scale clean energy, which can include solar, small hydro, and other resources between 2 and 5 MW in size; and 30 MW of combined heat and power—sometimes referred to as cogeneration, which means the production of both electricity and heat at the same location as energy consumption.

Major federal funding for energy storage and transmission upgrades for clean energy from the U.S. Department of Energy will support new clean energy across the state, produce low-cost energy, and increase grid resilience.

Offshore wind presents a generational economic and energy opportunity for Maine. As an abundant source of clean and renewable energy, offshore wind has the potential to help free Maine from its reliance on fossil fuels, lower energy costs and volatility, and reduce emissions. As an industry, offshore wind is poised for growth, subject to federal policies. This growth could support existing and emerging Maine companies, create new jobs and career opportunities for Maine people, attract new workers and families to Maine, and deliver infrastructure investments in communities across the state.

As part of Maine's commitment to responsible offshore wind development, Governor Mills signed bipartisan legislation that created the Maine Offshore Wind Research Consortium and established a prohibition on new commercial offshore wind projects in state waters, which extend three miles from shore. In coordination with the Maine Congressional Delegation, Governor Mills also successfully urged the Bureau of Ocean Energy Management to remove Lobster Area Management Area 1—vital fishing grounds for Maine's lobster industry—from commercial offshore wind leases in the final sale notice.

Maine Offshore Wind Roadmap

The Maine Offshore Wind Roadmap is a stakeholder-driven, comprehensive plan for Maine to realize the economic, energy, and climate benefits from offshore wind, including communities, tribal governments, fisheries, and wildlife of the Gulf of Maine. Continuing to invest in the implementation of the Roadmap—including a dedicated Maine port, transmission and interconnection planning, the Gulf of Maine Research Array, and advancement of Maine-based innovations—is crucial to meeting the state's energy goals and positioning Maine as a competitor and beneficiary in the emerging national and international offshore wind industry.

Regularly purchasing power from clean energy sources is key to meeting increased demands from the electrification of buildings and transportation. Maine must establish a regular schedule to procure clean energy supplies at least every two years. These procurements with clean energy suppliers should be closely coordinated and informed by grid planning activities.

Maine should continue to encourage highly efficient combined heat and power (CHP) facilities that can support the heating and energy needs of industrial and large institutional facilities. In 2020, the Legislature established the Wood-fired Combined Heat and Power Program, directing the Public Utilities Commission to procure renewable energy through long-term contracts from highly efficient CHP projects.

As required by legislation signed by Governor Mills, the Public Utilities Commission hosted a public stakeholder process to identify priorities for making the electric grid more reliable so the state can achieve its climate goals affordably. Continued planning will be important to identify current and future grid needs, reduce outage frequency and duration, effectively manage electricity demand, and understand options for necessary grid solutions, such as efficient upgrades to existing infrastructure and targeted investments in new practices and clean energy resources.

Building new energy generation, transmission, and distribution infrastructure—from distribution lines and poles to transmission, storage facilities, solar arrays, wind farms, and more—is urgently needed both in Maine and nationally to meet clean energy and climate goals. Greater collaboration with partners will be needed to help advance major projects. Improving the predictability of siting, permitting, procurement, and interconnection processes will help to avoid delays and cost increases. Maine's permitting agencies, in collaboration with federal agencies, should continue to reduce barriers to essential clean energy and transmission projects to help the state meet its goals while ensuring meaningful public engagement and protection of natural resources. State regulators and utilities should seek to continually improve and modernize the process for connecting clean energy projects to the grid.

Climate change is fueling increasingly destructive storms that are causing more frequent and longer power outages, as trees and tree limbs fall and knock down power lines. As Maine transitions to a clean energy economy and electrifies more energy uses, a reliable power supply for all Mainers must be a top priority. Clean energy resources like batteries can store energy for a few hours of use, and combining battery storage with on-site solar or wind generation can help critical facilities like hospitals, shelters, and emergency operations centers continue to function during extended power outages.

Maine should continue to help communities plan for clean energy through new stakeholder-informed resources such as model ordinances and best practices for increasing energy resilience.

Helping Nonprofits and Governments Access Clean Energy Tax Credits

New clean energy tax credits can help tax-exempt and governmental entities — such as states, local governments, tribal governments, territories, and nonprofits — reduce the cost of clean energy technologies that save money and increase health and efficiency. Thanks to the Inflation Reduction Act's elective pay (also known as direct pay) provision, these entities can receive a payment equal to the full value of tax credits for qualifying clean energy projects. Unlike competitive grant programs, in which applicants may not receive an award, direct pay allows entities to receive their full payment as long as they meet the requirements. Applicable entities can use direct pay for 12 of the Inflation Reduction Act's tax credits, including installing solar, wind, and battery storage projects; building community solar projects that bring clean energy to neighborhood families; installing electric vehicle charging infrastructure; and purchasing clean vehicles for state or city vehicle fleets. Tax credits are projected to be available through 2032.

POWERING UP WITH SOLAR ENERGY IN LIMESTONE

The Town of Limestone in Aroostook County received a $50,000 Community Action Grant through the Community Resilience Partnership to help purchase a pair of existing solar arrays located at the former Loring Air Force Base. A second $50,000 Community Action Grant is allowing the town to study and upgrade the solar arrays, boosting the electricity generation of the systems. The town is partnering with the Maine School of Science and Mathematics (MSSM), and together they will reduce their electricity bills by 95 percent with energy from the arrays.

The town and the school plan to use the savings to pay off the purchase price of the arrays in approximately seven years, after which they will use the electricity from the solar panels at no cost. "The Community Resilience Partnership grant demonstrates Maine's proactive leadership towards a transition to renewable energy and provides essential support for local projects," said Chuck Kelley, Chair of the Limestone Solar Committee. "The volunteers of the Limestone Solar Committee appreciate the opportunity to be a member of the Partnership, and these grant funds will help our community achieve strategic actions that were identified through the *Maine Won't Wait* climate plan."

"This Community Resilience Partnership grant helps a small town and a small school take charge of their energy future. As both recent geopolitics and local rates have shown, energy security is key in planning for a sustainable future," said Sam Critchlow, Executive Director of the Maine School of Science and Mathematics in Limestone. "As a school leader, I'm eager to take charge of our own energy needs. As an educator, I'm excited by the opportunity to involve our students, the next generation of climate leaders, in planning for a sustainable future."

Volunteers from the town of 2,200 residents along with students from MSSM and Northern Maine Community are using a data feed from the panels to monitor solar energy production at the sites and verify the school's energy savings.

This is not the town's first venture into solar energy. The Limestone Water and Sewer District built a solar array in 2018 on undevelopable wellhead land to offset energy usage at Limestone's wastewater treatment facility. That project's success convinced Limestone residents to authorize the town to purchase the arrays at Loring and increase their savings from solar energy.

GOING SOLAR AT FOXCROFT ACADEMY

The installation of 2,000 new solar panels atop the Jim Robinson Field House at Foxcroft Academy represented the largest rooftop solar project in Maine. The panels will provide enough clean energy over the course of a year to meet the electrical needs of both the Foxcroft Academy and RSU 68 campuses and will offset more than 1,000 metric tons of carbon dioxide emissions — the equivalent of burning more than 150,000 gallons of gasoline. "This solar power system will generate clean electricity for Foxcroft Academy and RSU 68 and serve as an educational tool inspiring young minds to explore the limitless possibilities of green technology," said Arnold Shorey, head of Foxcroft Academy.

"Our students will now have the opportunity to witness firsthand the workings of solar panels as they harness the sun's energy and convert it into power."

Maine will likely need to maintain some thermal generating capacity that can be used when needed to support reliability and help manage costs during extended periods of low solar and wind output and high demand, such as during a long cold stretch in the winter. Thermal generating resources like gas-fired generators that currently rely on fossil fuels could instead be powered by clean fuels, such as hydrogen, and bio-based fuels to meet Maine's clean energy targets in the coming years. Adequate clean fuels to meet the state's needs aren't viable in Maine yet, but it will be important for the state to monitor and evaluate market trends and policies regarding clean fuels and plan for them in the future.

Maine's efforts to ensure reliable, affordable clean electricity is available to all consumers in the state must account for regional electricity production and market dynamics. Both in-state and regional clean energy resources are important contributors to achieving Maine's goals today and in the future. Maine's Renewable Portfolio Standard ensures the electricity consumed in Maine will continue to become cleaner over time, relying on both in-state and regional generation sources. The northeast region has longstanding, robust mechanisms for measuring and attributing clean electricity attributes. However, emerging inconsistencies in regional accounting frameworks may lead to risks of under- or double-counting by jurisdictions with similar policy goals. Maine's emissions accounting should ensure the greenhouse gas emission reductions resulting from Maine's electricity consumption are fully and fairly attributed to Maine. Ensuring Maine's approach is transparent and aligned with others in the region will maximize the benefits of Maine's policies and enable continued cost-effective clean electricity deployment and adoption in the state and across the region.

Finally, the state should encourage small-scale renewable energy and storage that can make homes, communities, and businesses more resilient to power outages caused by extreme weather while providing reliable energy for day-to-day use. These small resources can often serve critical community facilities (e.g., police, fire, first responders). Significant tax incentives are available through the Inflation Reduction Act to help homeowners and businesses install solar and storage, and Maine's $62 million Solar for All award will increase access to solar and energy storage for rural, low-income and underserved households.

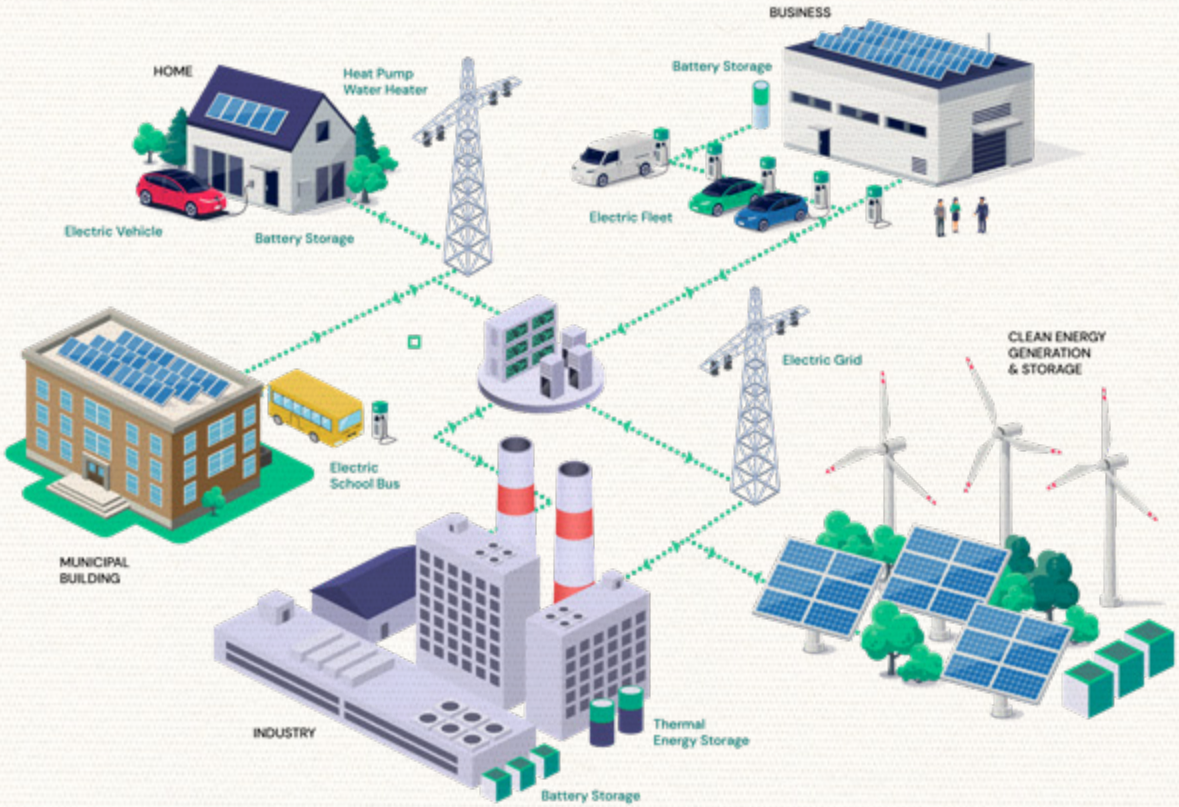
3

Manage the impact of buildings, vehicles, and industry on the grid with innovative demand-management and load-flexibility strategies

- **Adopt and implement software and technologies that can provide transparent price signals to help enable markets to balance electricity demand from homes, businesses, and industrial facilities with supply.**
- **Expand programs, markets, and regulations that help customers participate in demand-management initiatives and track participation in these programs by income.**
- **Launch an education and communications campaign around the opportunities and benefits of demand-management initiatives.**

As heating, cooling, and transportation switch from fossil fuels to electricity, Maine will need significant expansion of the electrical grid. However, by changing the way we manage energy, we can avoid unnecessary and costly build-out of grid infrastructure while still meeting the growing demand for energy.

Adopting adequate software and technologies to capture real-time grid conditions will be essential to managing demand and supply. Adjusting electricity use to match the electricity supply can help prevent grid outages during extreme weather events such as heat waves by making the grid more adaptable to variations in energy supply, particularly as we transition to a system with more variable resources like solar and wind. Capabilities such as automated network sensing, management, and communications systems will maximize the benefits of flexible loads such as electric vehicles, batteries, and other grid-integrated devices.



DEMAND MANAGEMENT

SMART AND COST-EFFECTIVE STRATEGIES TO KEEP UP WITH GROWING ELECTRICITY NEEDS

Electricity flowing through power lines is much like traffic traveling on highways. When travel demand is high, like a summer Friday heading north on I-95, we experience traffic jams; when electricity demand is high, like a cold January evening, we experience "peak periods." Traditionally, utilities have built power plants and powerlines to generate, transmit, and distribute electricity to ensure they can meet the single highest peak hour in the year. That's a lot more power than people need almost every other day of the year.

Over the next several decades, total electricity demand is expected to increase significantly. Continuing to build to meet the highest peak will become very expensive.

This is where demand management, or "load flexibility," comes in. It employs strategies and technologies to match electricity usage with supply. This can include shifting use away from peak periods, such as charging your electric car or turning on the dishwasher a few hours later than planned, or increasing consumption when cheap renewable energy is abundant, to "even out" the overall load on the grid. Small changes like these can increase available electricity when it's needed without building — and paying for — major grid expansions.

New technologies — like electric vehicles, water heaters, smart meters, and battery packs — are making demand management easier and more effective.

Helping customers access and participate in demand-management programs will also require supportive policies, programs, markets, and regulatory mechanisms, such as electricity rates that encourage customers to use power when it is cheaper. Demonstration projects could be valuable tools for testing the effectiveness of new programs or rate options with different types of customers in Maine.

Successfully managing demand can reduce overall system costs, which translates to lower costs—or avoided costs—for everyone. Different demand-management initiatives will target different types of customers (such as by customer class or load type). Program administrators such as Efficiency Maine, which offers battery and electric vehicle management programs, and others should ensure that demand management programs benefit low-income and other underserved households.

Governor's Energy Office Launches Maine's First Clean Energy Job Network

In May 2024, the Governor's Energy Office (GEO) launched the Maine Clean Energy Jobs Network, a new online directory that connects jobseekers to Maine-based clean energy employers and training opportunities.

GEO launched and developed the network in coordination with the Maine Department of Labor and Maine Department of Economic and Community Development through GEO's Clean Energy Partnership program, which works with other state agencies, employers, schools and colleges, workforce training organizations, and industry to expand job opportunities in Maine's clean energy sector.

Jobseekers and Maine-based employers hiring for clean energy jobs are invited to join the network, post jobs, explore open positions, and learn about clean energy training programs in Maine.

4

Grow Maine's clean energy economy to support 30,000 clean energy jobs by 2030

- **Continue to support already effective workforce initiatives with ongoing stakeholder coordination among industry, educational, and labor and training organizations.**
- **Support partnerships that create an ecosystem for cleantech innovation in Maine.**
- **Expand access to apprenticeships and other earn-and-learn models.**
- **Maintain an online clean energy jobs and training database.**
- **Create tailored tools, resources, and training to support underserved students and job seekers.**
- **Identify pathways to clean energy and climate-friendly careers for workers and industries most impacted by climate change, including stackable workforce credentials in K-12 and higher education.**

In 2023, Maine's clean energy sector employed over 15,000 people—more than halfway towards reaching Governor Mills' 2030 goal. In 2022, Maine's clean energy sector grew more than three times faster than the state's overall economy between 2016 and 2022 and outpaced growth in all other New England states. Maine has over 2,500 clean energy businesses, representing approximately 4 percent of total businesses throughout the state, which are contributing $2.31 billion to Maine's economy. The *2023 Maine Clean Energy Industry Report* found that the sector is poised for continued growth and that "the growth of the industry presents new and increasingly valuable career opportunities to Maine residents from many backgrounds and with a wide range of skills and knowledge."

Maine established the Clean Energy Partnership (CEP) program, a recommendation in *Maine Won't Wait,* through the Governor's Maine Jobs and Recovery Plan to advance Maine's clean energy, climate, economic development, and workforce goals. The CEP is led by the Governor's Energy Office (GEO), in close coordination with the private sector and public sector partners, including the Governor's Office of Policy Innovation and the Future, the Maine Department of Labor, and the Maine Department of Economic and Community Development.

GEO has awarded $2.9 million in grants to clean energy employers, educational institutions, industry associations, and nonprofit organizations to attract new workers, provide career training and upskilling, increase diversity and representation, and facilitate entry into the clean energy job market. This includes supporting apprenticeships, affordable and accessible trainings, and free credentialing in partnership with the Maine Department of Labor. GEO has also awarded $1.3 million in grant awards through the CEP program to fund a business advising initiative, an accelerator program, and the state's first clean energy business incubator. These three programs will support the development of innovative clean energy businesses in Maine.

To help people enter clean-energy careers, Maine should create clear pathways into these fields, particularly for workers in industries that are most impacted by climate change. This includes establishing seamless career pathways in grades K–12 and higher education through Career and Technical Education and/or dual enrollment in the Maine Community College System, which will lead to relevant industry-recognized credentials, certificates, associate degrees, and beyond.

COLE ELLIS

CLEAN ENERGY ENTREPRENEUR

A Mainer with an entrepreneurial spirit, Cole Ellis, 19, of Searsport, seized the opportunity to forge a green career path for himself at an early age — and he's not done yet.

"Maine is important to me because I grew up seeing how beautiful the state can be," he said. "And heat pumps are the most efficient heating source."

Ellis owns and operates Keep It Clean Heat Pumps, a business he started as a high school junior in Searsport, with a name his mom helped him devise. Thanks in part to a 40-hour heat pump installation and certification course at Kennebec Valley Community College, funded by the Maine Jobs and Recovery Plan, Ellis provides cleaning and air quality services in the Midcoast area to the growing number of heat pump owners to help maximize their home heating efficiency.

"It's important for our generation to get involved with climate change because we're the ones that are going to be living in this environment," he said.

Now a rising sophomore at Thomas College, Ellis has two employees and continues to grow his business when he's not at school to keep up with demand.

"I would encourage anybody to get into the environmental fields, especially because this is your future."

STRATEGY D

CREATE JOBS AND GROW MAINE'S ECONOMY THROUGH CLIMATE ACTION

Climate change is threatening the natural resources that underpin Maine's economy and the livelihoods that depend on them. The forestry, farming, fishing, and outdoor recreation industries must contend with disrupted growing seasons and warming waters and winters. Businesses of all kinds are devoting more of their budgets to preparing for and responding to disasters. Young people are reevaluating which careers will be up to the available to sustain their lives and families for years to come.

At the same time, new opportunities are arising in Maine's response to climate change. Rich oceans, abundant forests, and productive farmlands position Maine's heritage industries to lead in trillion-dollar markets for global climate solutions. Making businesses more climate friendly can save on both operating costs and emissions. Growth in the state's clean energy and energy efficiency sector requires a skilled workforce, creating thousands of well-paying jobs that are already helping Maine families thrive.

Transformative workforce investments through the Maine Jobs and Recovery Plan, working in tandem with the Maine Economic Development Strategy, are helping to build an economy poised for prosperity, including major efforts to draw young people into quality careers through career exploration and apprenticeship, new partnerships between training providers and industry to deliver cutting-edge training, and modernization of equipment and facilities across our technical schools, community colleges, and public universities. Other transformative state investments have made community college free for recent graduates and revamped employer incentives that directly support worker training.

Over the past four years, Maine has matched these workforce investments with tens of millions of dollars to help Maine innovators unleash new solutions in clean energy, agriculture, seafood, forestry, and other technologies. A $25 million research and development bond approved by voters in November 2024 offers another opportunity to advance Maine-made innovation and products.

Over the next four years, Maine must sustain and build on these investments. This means focusing on drawing more Mainers into quality climate careers and then helping those individuals build their skills to deliver on, and benefit from, a Maine economy that embraces the opportunities in climate action.

Leading Maine businesses are pioneering sustainable business approaches to meet the needs and interests of local and national consumers. Hannaford Supermarkets, Maine's second-largest employer, have led across their business operations with clean energy, energy efficiency investments, and reductions in food waste. Portland-based WEX, an international technology provider of business services, offers public and at-home electric vehicle charging payment solutions that support fleet transitions to clean vehicles. Leading companies from the ski industry to breweries are accommodating consumers and tourists who are increasingly looking to spend their dollars at corporations that promote sustainability and climate solutions as part of their business model.

PROGRESS SINCE 2020

Catalyzing Clean Energy Jobs

The number of clean energy jobs in Maine surpassed 15,000 in 2022, more than halfway to the goal of 30,000 clean energy workers in Maine by 2030. Maine is growing this workforce through the establishment of the Maine Climate Corps, Maine Career Exploration, the Maine Clean Energy Jobs Network online portal, and the University of Maine System's Maine College of Engineering and Computing, as well as the expansion of existing programs such as Registered Apprenticeships.

Several new programs are helping Maine launch and grow clean-economy businesses, including the Clean Energy Partnership, which has funded CEI's Weatherization Business Lab, the Roux Institute's CleanTech Incubator, and Central Maine Growth Council's Dirigo Lab Cleantech Programming; Maine Center for Entrepreneurs and FocusMaine's FoodTech Maine; and the Domestic Trade Pilot Program at Maine's Department of Economic and Community Development.

Attracting Federal Investments

Maine's policies, focus on innovation, and collaboration with other states in the region are also attracting new businesses and investors to the state. In summer 2024, it was announced that Maine and a group of New England states were awarded a $389 million grant to strengthen the regional electric grid and advance the deployment of clean energy, including a $147 million investment in the world's largest multi-day energy storage facility to be located in Lincoln, which will breathe new life into the former mill.

In the summer of 2024, the state also announced it had reached an agreement with the federal Bureau of Ocean Energy Management on the country's first research lease in the Gulf of Maine for a floating offshore wind research array, a significant milestone in Maine's efforts to advance a responsible offshore wind industry in the state.

These announcements add to $65 million in federal grants to the state and two of its utilities for new technologies to enhance grid planning and operation in Maine, deliver more clean energy, and strengthen workforce initiatives; $62 million to support the delivery of solar and storage to low-income Maine people; $6.6 million in federal grant awards to increase resilience of local electric grid infrastructure to extreme storms; $800,000 to enhance training opportunities for energy auditors; and other grants to public and private sector entities such as the $425 million investment to expand transmission infrastructure in northern Maine.

Innovating with Natural Resources

Maine innovators are bringing to market sustainable technologies and solutions that offer climate-friendly improvement over traditional products. For example, Madison-based startup manufacturer TimberHP is the first and only producer of renewable, carbon-storing wood-fiber insulation in America. Standard Biocarbon's new facility is producing Biochar in a process that sequesters carbon and can also be used to recondition soils and make farms more resilient. Brewer-based Nyle Systems manufactures industrial and commercial-scale heat pumps. Atlantic Sea Farms is among the largest domestic producers of kelp and is exploring new markets beyond food in cosmetics, plastic replacements, and animal feed. University of Maine researchers are partnering with dozens of companies around the world to commercialize wood-derived nanocellulose materials as synthetic bone, food coatings, and firefighting foam replacements. In recognition of this leadership in the global clean-technology economy, in October 2023, the U.S. Economic Development Agency designated Maine as a Forest Bioproducts Advanced Manufacturing Tech Hub, one of only 31 nationwide, which offers opportunities to attract significant future funding.

These initiatives have contributed to Maine's remarkable progress towards our strategic economic development goals: inflation-adjusted wages are up nearly 10 percent, the value of what we sell per worker is up almost 14 percent, and our workforce has grown by over 20,000 people since 2022.

1

Innovate with natural resources and clean technologies that help reduce emissions and increase resilience to climate impacts

- **Elevate Maine's global innovation leadership in floating offshore wind, advanced building materials, and biotech products derived from forests, oceans, and farms.**
- **Accelerate the timeline for bringing climate-friendly technologies emerging from Maine's research institutions to market.**
- **Attract more private sector investment capital for Maine technologies and businesses offering climate solutions.**
- **Cultivate inclusive new business creation in Maine's climate, clean energy, and natural resource industries.**
- **Develop Maine communities as "Hubs of Excellence" in sectors critical to Maine's climate and economic success.**

Maine's Economic Development Strategy highlights compelling opportunities in floating offshore wind, advanced building materials, and biotech products derived from forests, oceans, and farms. We must support collaborations that can accelerate research, commercialization, market development, and infrastructure necessary for these technologies, which will provide quality jobs for tens of thousands of Mainers well into the 21st century. Building on Maine's designation as a federal Tech Hub for Forest Bioproducts, and the efforts of the Forest Opportunity Roadmap (FOR/Maine) initiative, the state should identify and address the barriers to expanding mass timber production facilities, wood-derived plastic alternatives, and other future bio-based materials manufacturing in Maine.

Maine's research and development (R&D) institutions lead the world in advancing climate-critical discoveries in floating offshore wind, advanced wood products, and food and agriculture technologies across our farms and oceans. The urgency of the climate crisis demands that we speed up the rate at which these technologies reach the market at scale by investing more in R&D while also strengthening capabilities and incentives for technology transfer and commercialization.

Maine ranks 45th nationally—and last in New England—in venture capital invested to spur new businesses since 2019.[1] This financing gap makes it more difficult for Maine entrepreneurs to access the resources they need for growth. Maine can attract more investment of all types by increasing state support for patient, risk-tolerant capital that encourages private investment at Maine Technology Institute, Finance Authority of Maine, and Maine Venture Fund, as well as strategically pursue complementary funding sources including federal grants, corporate partnerships, and philanthropy. Maine should also help cleantech entrepreneurs access national investors by building out the Maine Funding Network and more frequently bringing top-tier innovation investors to meet with founders of climate technology companies in our region.

Investing in Maine's Workforce through the Maine Jobs and Recovery Plan

Governor Mills' Maine Jobs and Recovery Plan is making historic investments in the development of Maine's workforce to help Maine people achieve their full potential. Paid work experiences for young people and upgrades to career and technical education programs are strengthening students' early foundations for rewarding work. Apprenticeships, no- and low-cost job training, and tuition support for credential attainment are providing workers with job skills that unlock well-paying careers. Industry talent partnerships, community-based career counseling, and peer supports are connecting more Mainers to quality jobs and equipping them for success.

CLEAN ENERGY CAREERS

REVISION ENERGY PARTNERS WITH PORTLAND ADULT EDUCATION ON APPRENTICESHIPS

With a grant from the Maine Department of Labor's Maine Apprenticeship Program, Portland Adult Education partnered with ReVision Energy to launch new pre-apprenticeship programs for clean energy careers, including English language learning in the context of clean energy jobs.

Revision Energy was awarded $300,000 from the Maine Governor's Energy Office's Clean Energy Partnership Program to increase the visibility of clean energy careers, assist job seekers and students in the identification of solar career pathways, develop and deliver existing and new trainings and apprenticeships resulting in industry-recognized credentials, provide hands-on experience opportunities to trainees, share best practices to streamline the implementation of employer-sponsored solar apprenticeships in Maine, and address barriers to participation for underrepresented populations. The project aims to engage 850 students via ReVision's Tiny Climate Classroom, engage 100 job seekers through statewide webinars, support 110 participants in attaining NABCEP PV Associate certification, and support 16 participants in attaining a newly developed PV Design certification.

Maine needs a significantly larger and more diverse pipeline of entrepreneurs, products, and business models to create the climate jobs of tomorrow. Maine should sustain entrepreneurship programs focused on climate solutions, build out more shared production facilities for climate tech like Tech Place in Brunswick and Fork Food Lab in Portland, and ensure broad access to small-business assistance programs, like Maine Department of Economic and Community Development's Domestic Trade Pilot Program and Maine Technology Institute's Maine Entrepreneur Resource Corps.

As mills have closed and industries have shifted across Maine, many communities have re-envisioned themselves as hubs of economic growth in forest products, food, outdoor recreation, ocean industries, and renewable energy. Accelerating the development of these hubs is a priority of Maine's Economic Development Strategy and will ensure that Maine people in every region of the state benefit from the businesses and good jobs created.

2

Help Maine businesses and natural resource industries succeed in the global climate and clean energy economy

- **Increase the resilience of Maine's heritage industries in the face of climate threats.**
- **Use state and federal incentives to increase the efficiency of manufacturing practices.**
- **Bolster climate resilience for Maine's outdoor recreation industry.**
- **Modernize permitting without compromising Maine's high environmental standards.**
- **Help Maine businesses and other entities take advantage of electrification, efficiency, electric vehicle, and clean-manufacturing business incentives and recognize exceptional efforts.**
- **Seed markets for Maine-made, climate-ready products through new procurement pathways for the state, municipal governments, and other public institutions in Maine.**

Climate change is threatening habitats essential to Maine's fisheries, disrupting crop growing seasons, increasing the vulnerability of our forests, and altering winter recreation opportunities. Maine's heritage industries—fishing, farming, and forestry—will benefit from diverse business models and targeted investments that build resilience to climate impacts and protect their critical infrastructure, such as working waterfronts. Maine should commission a Maine Farmland Action Plan to articulate goals and strategies regarding Maine's farmland resources and agricultural economy and support implementation of the Seafood Economic Accelerator for Maine (SeaMaine), the Blue Economy Task Force, the Outdoor Recreation Economy Roadmap, and FOR/Maine, which each offer paths forward for these sectors at the heart of Maine's economy.

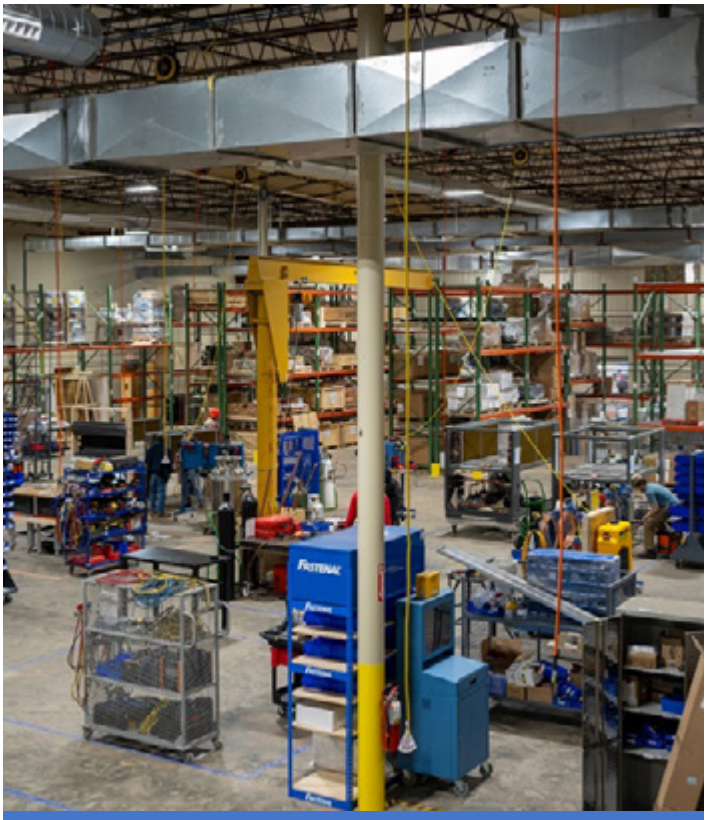
TIMBERHP INNOVATES IN FOREST PRODUCTS

TimberHP is a Maine-based startup manufacturer that produces thermal and acoustic wood-fiber insulation products for the residential and commercial construction market. By revitalizing a shuttered paper mill for its first production facility in Madison, TimberHP became the first — and only — company to manufacture insulating wood-fiber composites in North America. TimberHP insulation is manufactured from sustainably produced wood-chip residuals, and is a high-performing, cost-competitive, scalable, renewable, and carbon-sequestering alternative. When operating at full capacity, TimberHP Madison will produce almost 20 tons of product an hour, use over 250,000 green tons of softwood residuals per year, generate $168 million of revenue, and employ 144 people. TimberHP exemplifies the technological and economic leadership at the heart of Maine's Forest Bioproducts Advanced Manufacturing Tech Hub.

Maine's outdoor industry is on the frontlines of climate change, facing direct impacts like shorter winters and more extreme weather events. We must equip the industry with up-to-date data and practical solutions to enhance resilience. By helping businesses and organizations adapt their operations, infrastructure, and offerings to withstand climate disruptions—such as by expanding shoulder season activities and developing durable trail systems to handle increased heavy rainfall and flooding—Maine can safeguard the long-term success of its outdoor recreation sector.

Maine businesses both large and small have been at the forefront of responding to climate change. As local consumers and tourists continue to demand sustainability and accountability, businesses can take action to become more climate friendly while reducing operating costs. The Inflation Reduction Act created new pathways for businesses, nonprofits, and municipalities to make energy efficiency and climate-resilience upgrades by establishing a suite of new grant and loan programs and expanding federal clean energy tax credits. Maine should help businesses adopt energy- and cost-saving upgrades by documenting, publicizing, and advocating for the increased uptake of these opportunities by the private sector.

For manufacturers, partnerships with experts at the University of Maine's Advanced Manufacturing Center, the Roux Institute, Efficiency Maine, and Maine's Manufacturing Extension Partnership can lead to process improvements that reduce energy costs and emissions and increase outputs.



Creating New Jobs and Manufacturing Efficient Heat Pump Technology in Bangor

Nyle Systems, a manufacturer of commercial heat pump and heat pump water heater systems based in Brewer, received $386,667 from the Pandemic Recovery for an Innovative Maine Economy (PRIME) grant program, funded by the Maine Jobs and Recovery Plan and administered by the Maine Technology Institute. Nyle expects to employ 111 people by the end of 2024, with revenue reaching $28 million.

"The grant helped us buy production equipment and improve our facility to scale our production, and it put us on the path to continue growing beyond the grant. For example, at the time we had just expanded within our facility at 12 Stevens Road in Brewer from approximately 30,000 square feet to 54,000 square feet. Since December 2023, we added a second 30,000 square foot plant at 690 Maine Avenue in Bangor for a total of 88,000 square feet of production space. It also helped us improve our compensation and benefits packages for our employees, helping to make Nyle a better place to work."

—CEO Ton Mathissen

Regulatory barriers may inadvertently favor incumbent processes over emerging technologies. Simplifying and streamlining state and local permitting, while continuing to protect the environment, will spur denser housing production, accelerate infrastructure improvements needed for climate resilience, and unlock the creation of more climate-ready jobs. In 2025, the Maine Department of Environmental Protection will begin using an online system for submitting, tracking, and commenting on applications for environmental permits. This will increase accessibility and transparency for residents who may be affected by projects and will reduce the time it takes to obtain a permit decision.

Maine can support its fledgling climate-related businesses by streamlining procurement pathways to support public institutions in becoming early buyers of their products. This provides businesses with critical cash flow and builds investor confidence necessary to reach a sustainable scale. This action builds upon Governor Mills' executive orders committing the state to lead by example in state-owned and leased buildings.

3

Strengthen and grow Maine's climate-ready workforce

- **Create opportunities for 7,000 new Registered Apprentices by 2030.**
- **Bring more non-traditional workers and underserved populations into quality jobs in the trades and other climate-related fields.**
- **Improve licensing pathways to help Maine workers get started in the trades, manufacturing, and natural resource industries.**
- **Connect young people to climate action and careers by growing and sustaining funding for the Maine Climate Corps, paid work experiences, pre-apprenticeships, middle and high school technical education programs, and marketing campaigns.**
- **Expand industry partnerships to ensure trainees gain the skills employers need and quality jobs await program graduates.**
- **Build on historic levels of investment in Maine's clean-economy workforce.**

In September 2024, Governor Mills joined the U.S. Climate Alliance in announcing a commitment to collectively train more than one million new Registered Apprentices. An investment of $12.3 million through the Maine Jobs and Recovery Plan has already doubled the number of apprentices in Maine registered with the U.S. Department of Labor and led to the creation of dozens of new pre-apprenticeship programs. Sustaining investment to maintain and grow this effective employment model is essential to advancing climate goals.

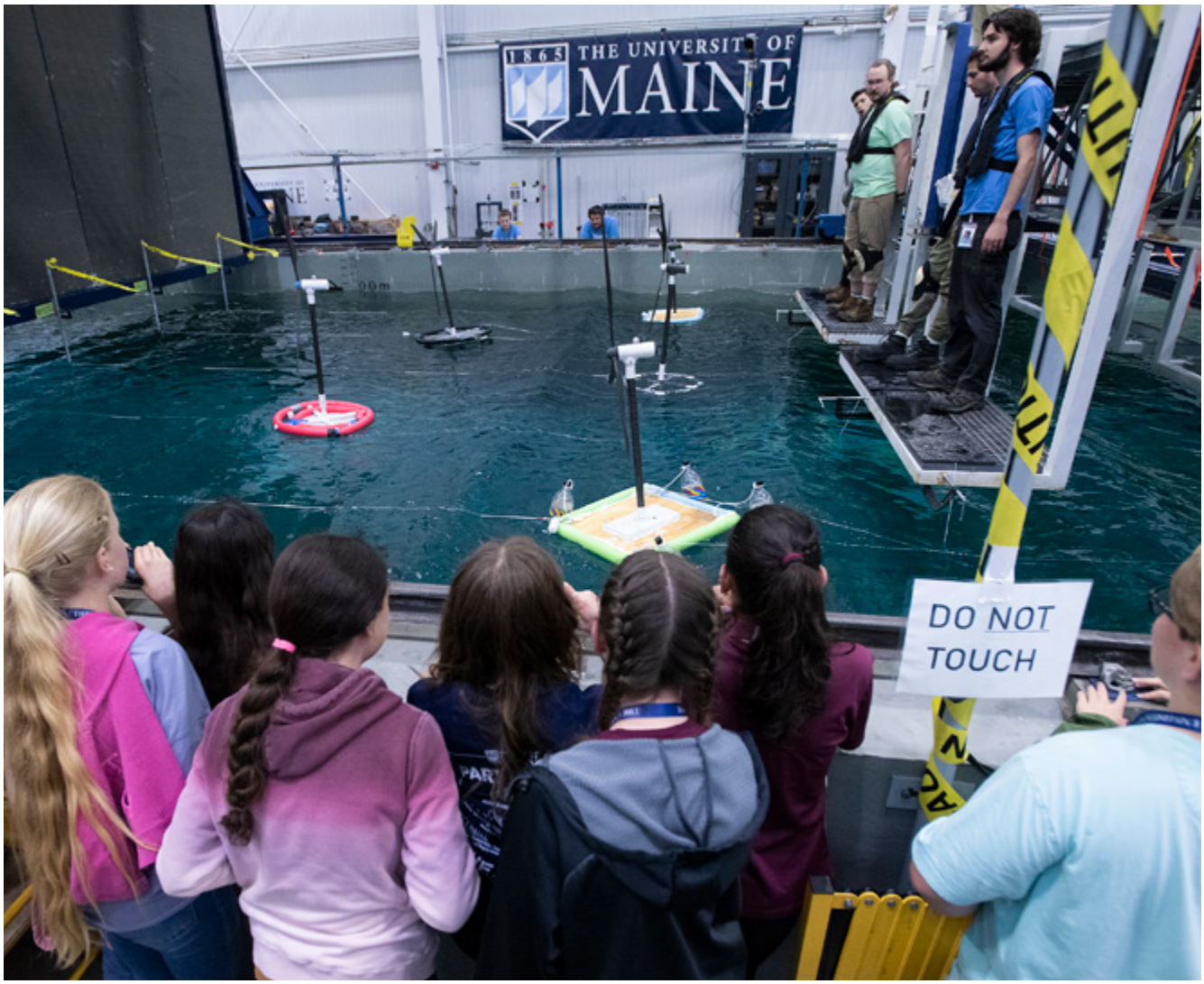
Governor Mills' 2024 executive order to increase women's employment in Maine's construction industry recognizes that eliminating barriers to work for all Maine people is a critical path towards alleviating Maine's construction workforce shortage, especially as the state makes historic investments in resilience and infrastructure. The establishment of Maine's Office of New Americans, Maine Jobs and Recovery Plan investments in vocationally-oriented English language instruction, dedicated women-in-trades pre-apprenticeships, specialized career assistance for individuals with disabilities, and Maine Department of Economic and Community Development's Diverse Talent Attraction and Retention grants offer a strong foundation on which to broaden the talent pool for climate careers. Maine should continue to work with employers to ensure compliance with state and federal labor laws while promoting job quality and safety informed by federal Good Jobs Principles across all climate-ready fields.

Reciprocal recognition of out-of-state certifications, additional competency-based testing, and more credential evaluation assistance for professionals trained in other countries will bring more expertise to our state while maintaining safety standards. Maine should also improve licensing pathways for climate-critical jobs, including electricians, manufactured housing professionals, and heat pump technicians.

The successful 2023 launch of the Maine Climate Corps—a recommendation in *Maine Won't Wait*—mirrors what national research tells us: young people are looking for careers that benefit the climate. As of August 2024, the Maine Climate Corps Network includes approximately 150 members participating in 10 programs focused on community resilience planning and energy education and outreach. Continued investment in early career exposure through paid work experiences (such as those offered by the Maine Career Exploration program), certified pre-apprenticeships, and middle and high school technical education programs will help young Mainers recognize the breadth and depth of opportunities to make a meaningful difference and earn a quality living in their home state.

Industry partnerships—such as Maine's Clean Energy Partnership, FOR/Maine, and Maine Defense Industry Alliance—offer models for how Maine's education and training providers can partner with employers to ensure training curricula remains cutting edge and that good jobs await graduates.

With pandemic recovery funds ending, Maine must explore new models of maximizing state, federal, philanthropic, and private funding for talent development, with a particular focus on good-paying occupations in the trades, manufacturing, and natural resource economies. To expand opportunities for skilled professionals in the trades, Maine should also explore creating a tax credit for employers in the construction sector that mirrors the employee training component of Maine's Dirigo Business Incentive program.



Students watch their floating offshore wind turbine platforms being tested for performance and survivability at the annual Windstorm Challenge event held at the University of Maine's Advanced Structures and Composites Center.

A HANDS-ON APPROACH TO CLIMATE ACTION

After graduating from Lesley University in 2017 with a degree in environmental science, Jamie Snook, now 29, decided she needed a hands-on job that didn't feel limiting.

"I didn't want anyone telling me that I needed to create differently," she said. "It reminded me that life can be a little bit more grounded in the landscape we're surrounded by."

She eventually found her way to carpentry after moving to Maine, stumbling into an opportunity to gain skills alongside a crew of two men on a renovation project. She's among many women entering the trades to connect with alternative ways to help the environment and improve housing.

"Bringing more diversity into the trades creates a more robust conversation," she said. "Carpentry requires a lot of mental work and presence, and women have this nurturing energy. We're able to think about how we will do this differently, and how we will work with the earth rather than against it and use less energy."

Drawn to sustainable materials, alternative building practices and energy efficiency, Snook landed with GO Logic, a Passive House builder out of Belfast, five years ago. She's now a foreman, managing her first building project, including crewmembers who are often older than she is. "I fell into it by accident and just fell in love with the work and how it made me feel — how engaging it was. I think there's a stigma around trade work that it's just for brutes. And that's just not true."

She's also part a group of women in the early stages of forming a nonprofit called Tradeswomen Collective as a landing place for women in the trades to provide resources, connect, and celebrate their work. That potentially includes on-ramp opportunities for young women interested in knowing more about the field as an option for their post-high school years.

"I was definitely pushed into academia after graduating from high school. And I think there was a lot to gain from that; I don't regret my decision there. But I had no idea this field would be an option," she said.

TRAINING FOR CLEAN ENERGY CONSTRUCTION IN HIGH SCHOOL

Lucas Huff landed a clean energy job through his apprenticeship training experience with the Associated General Contractors' Maine Construction Academy Pre-Apprentice Program funded by Governor Mills' Maine Jobs and Recovery Plan. He now works with Wyman & Simpson, Inc., which builds utility and hydro-electric projects around Maine.

"Construction has been a dream of mine, and I always loved running equipment when I got the chance with my dad. Those six weeks were amazing, and I wish I could do it all over again. We got to visit some amazing company job sites. Then a couple weeks before senior year, Wyman & Simpson hired me and one of my buddies. They taught me how to do things, get my hands dirty, and work hard. Going on to my second week, knowing I picked a great job is amazing at such a young age."

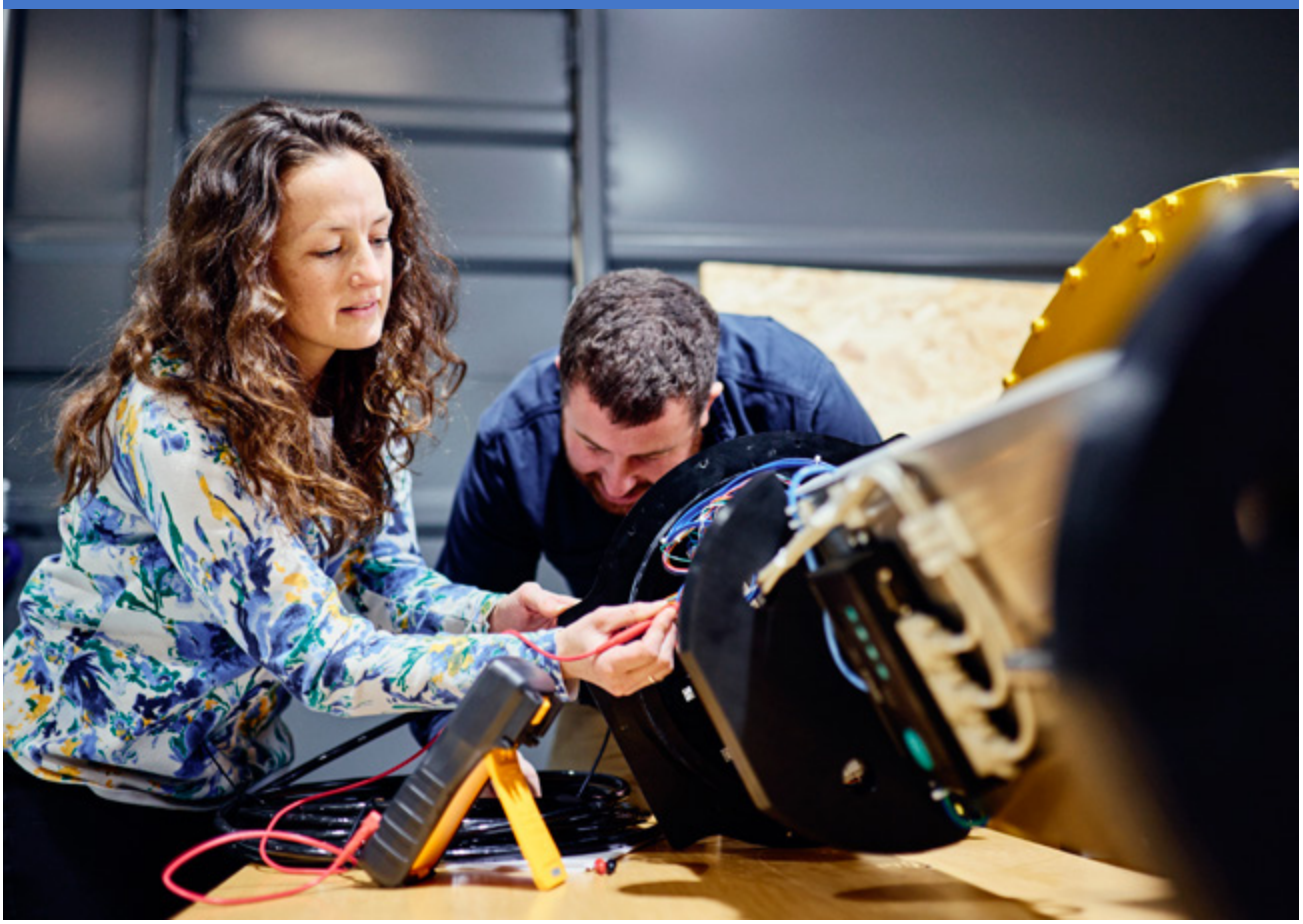
What Kinds of Jobs Does Maine Need to Achieve its Climate Goals?

Maine Climate Council working groups identified dozens of occupations where strengthening the workforce is necessary to reduce emissions, increase resilience, and advance climate solutions. Some of these jobs are in Maine's clean energy workforce, such as the solar installers, wind turbine mechanics, and electrical line workers building out Maine's renewable energy production and distribution.

Supporting smart growth requires municipal planners working in communities to update community development strategies and more code enforcement officers to reduce delays in permit approval.

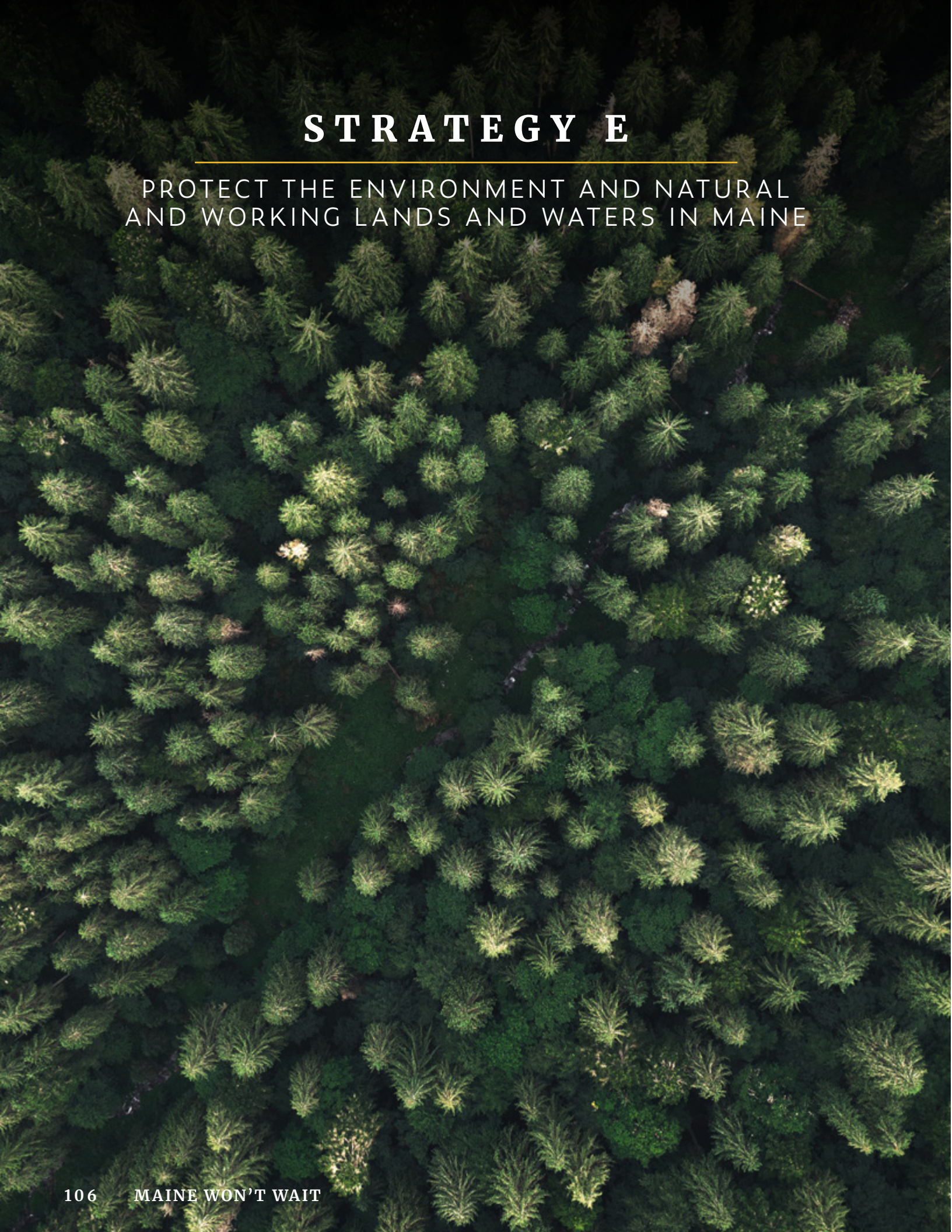
Energy auditors, weatherization technicians, carpenters, and heat pump installers are all involved in making our buildings more energy efficient. Maine manufacturers employ product designers, machining technicians, and engineers of all types to produce climate-friendly materials and products.

Farmhands, foresters, loggers, millwrights, commercial fishers, ecologists, and marine biologists keep Maine's farms, fields, and oceans healthy and working. Civil engineers, construction managers, GIS specialists, surveyors, and heavy equipment operators are hardening Maine's infrastructure to climate impacts, while public safety professionals and emergency management specialists work together to save lives and property as climate change increases the frequency of major storm events.



END NOTES

1 Analysis of National Venture Capital Association (NVCA)-Pitchbook Venture Monitor data accessed at https://nvca.org/document/q2-2024-pitchbook-nvca-venture-monitor-data-pack/



STRATEGY E

PROTECT THE ENVIRONMENT AND NATURAL AND WORKING LANDS AND WATERS IN MAINE

Maine's abundant forests, rugged coastlines, and local farms depend on vibrant natural ecosystems. These natural and working lands and waters that embody our state's character are simultaneously threatened by climate change and, through their ability to store carbon, act as one of our most powerful tools to fight it.

Forests in Maine currently sequester, or capture and store, an amount of carbon equal to approximately 91 percent of our annual greenhouse gas emissions. While forests cover most of our state, they face pressure from development that both hinders their carbon storage potential and contributes directly to additional emissions. Climate change is increasing risks from pests, invasive species, and disease on the natural and working lands and aquatic environments in Maine. Coastal and marine areas, like salt marshes, sand dunes, and wetlands, also provide important carbon storage benefits while protecting our communities from flooding and erosion. Rising sea levels and other climate change impacts threaten the survival of these important areas.

Beyond storing carbon, these lands and waters provide clean drinking water and sustain wildlife habitats and ecosystems. The farming, fishing, forestry, tourism, and outdoor recreation industries that rely on these ecosystems benefit the health of our people and economy.

Maine Won't Wait established a goal to increase conserved natural and working lands in the state to 30 percent by 2030. As of 2024, Maine has conserved approximately 22 percent of the state's land. To increase the rate of land conservation in Maine, the state should establish a permanent, ongoing funding source for conservation, including the Land for Maine's Future Program. As the climate changes, Maine's approach to natural and working lands and waters should emphasize restoration as well as protection, to reduce harm from climate impacts and sustain ecosystems for generations to come.

In order to achieve the state's goal to become net carbon neutral by 2045, Maine must maintain existing forestland and encourage climate-friendly forestry practices that increase carbon storage and help forests become resilient to climate change.

Increasing access to food grown and harvested in Maine, including climate-friendly practices that enhance soil health, can strengthen the food system against climate change and supply chain disruptions. This supports the farming, fishing, and aquaculture industries in Maine, preserving and creating jobs. A proposed Maine Food Plan will identify specific recommendations to increase equitable access to Maine-grown and harvested food for all Maine people, including low-income residents.

Preventing food waste can reduce Maine's greenhouse gas emissions by decreasing the amount of discarded food that decomposes in landfills. Tracking and reducing food waste, consumer education, support for redistributing food to people who need it, composting, and anaerobic digestion are all paths to prevent food waste or reduce its emissions impacts.

Protecting natural and working lands and waters in Maine will continue to require research and monitoring to understand changing climate impacts. Expanded capacity, technical support, and incentives will support individuals, businesses, and communities as they implement adaptation strategies. New products and markets can create economic opportunities for Maine's forest products, agriculture, and fisheries and aquaculture industries to help them diversify and adapt to climate changes.

Conserving New Lands for Maine's Future

Governor Janet Mills, in September 2024, announced funding for 12 new Land for Maine's Future (LMF) conservation projects across Maine, preserving thousands of acres of farmland, undeveloped land, and vital working waterfront access for generations to come.

This follows the Governor's proposal and the Legislature's overwhelming approval of $40 million to reinvigorate LMF in Fiscal Year 2022. Since then, the LMF Board has approved 75 new projects, totaling $29.9 million. These projects are expected to leverage an additional $58.75 million in private and federal funds.

The LMF program, established in 1987 through a $35 million bond approved by Maine citizens, is the state's primary method of conserving land for its natural and recreational value. Recognizing the importance of working lands and public access to these lands in preserving Maine's quality of life, the program has conserved over 642,000 acres of land, including 333,425 acres of working land.

This remarkable work includes the establishment of 73 water access sites, providing access to over 67 miles of shoreline on rivers, lakes, and ponds, the preservation of 42 farms and 9,819 acres of farmland, the conservation of 30 working waterfront properties, the conversion of 158 miles of former railroad corridors into recreational trails, and the creation of over 100 miles of coastal access.

1

Increase the total acreage of conserved natural and working lands in the state to 30 percent by 2030

- **Establish permanent funding for existing and new land conservation programs, including the Land for Maine's Future program.**
- **Focus land conservation on areas that are richly biodiverse, connect to other conserved areas, have high potential to draw back and store carbon, are culturally and economically important, and that expand equitable access and use for underserved communities.**
- **Develop a Maine Farmland Action Plan to safeguard the state's agricultural resources by doubling permanently protected farmland in Maine by 2030. Establish a new state program that identifies ongoing, dedicated funding for farmland conservation.**
- **Restore and increase the resilience of coastal, marine, and inland habitats, prioritizing areas that connect to already conserved lands and waters, promote ecosystem connectivity and health, and allow for upland migration of saltwater marshes as sea levels rise.**
- **Expand public and private capacity to support conservation acquisition and stewardship.**

In recent years, Maine has conserved about 50,000 acres annually. This means that to reach the goal of conserving 30 percent of land by 2030, approximately 250,000 additional acres need to be conserved each year. To increase the rate of land conservation in Maine, the state should establish permanent, ongoing conservation funding that generates significantly more resources than historic levels, including ongoing funding for the Land for Maine's Future program. Since most forested lands in Maine are privately owned, Maine should use a collaborative process for meeting land conservation goals for natural and working lands while respecting the individual management objectives of private landowners.

As Maine works to increase the percentage of conserved lands, it should prioritize areas with high carbon storage potential, high biodiversity, cultural and economic value, and opportunities to expand public access for all Mainers. Conservation efforts should prioritize properties that support the goals of and secure land for the Wabanaki Nations; increase open space opportunities for Maine residents located within a 10-minute walk of where they live; include ADA-accessible trails and boat access within 10 miles of Maine population centers; and protect working waterfronts. Focusing land conservation efforts on equitable access and use for underserved communities will help provide cultural, economic, and recreational opportunities for all Maine people.

The vast majority of conserved lands in Maine are large working forest conservation easements. Farmland conservation has not had the same level of public investment, with only 3.5 percent conserved. Farmland conservation helps Maine to become more resilient to future climate-related disruptions to the global food supply chain, as well as sequester carbon, protect land from development, reduce transportation emissions, and make land more resilient to climate effects like droughts. Strategies such as purchasing agricultural easements can make land more affordable as development increases prices, reducing barriers for new farmers and helping families transfer farms to the next generation. Maine should establish a new program to fund farmland conservation in collaboration with nonprofit and federal partners. This will require significant funding that enables farmland conservation to occur at a much faster pace in order to protect at least 7 percent of the state's presently unprotected farmland by 2030 and ensure no net loss of farmland in Maine.

Interconnected ecosystems sustain our state from the sea to the shores and interior. Inland ecosystems provide wood and clean drinking water. Coastal habitats protect against sea-level rise. Marine areas support the livelihoods of Maine fishermen and harvesters and feed those harvesting for sustenance. As the climate changes, simply protecting coastal, marine, and inland ecosystems is no longer sufficient. Maine must prioritize habitat restoration and resilience, aiming to repair and rebuild along with mitigating harm.

BLUE CARBON IN MAINE

Maine's coastal environment plays an important role in capturing and storing carbon. Bates College Professor Beverly Johnson researches blue carbon ecosystems and how they can help mitigate climate change.

Q: How did you become interested in studying Maine's carbon cycle?

A: When I came to Maine as a geology professor 22 years ago, I began to explore the coastal history of Maine as recorded in the geochemistry of organic-rich sediments of salt marshes. I was astounded at the amount of carbon in these systems and the rates of carbon burial. In 2011, I was invited to join the Blue Carbon Initiative (BCI) and became aware of the importance of blue carbon ecosystems in the global carbon cycle. I came to see what a powerful role these salt marshes, along with eelgrasses and seaweeds, could play in combating climate change.

This experience and the folks that work on blue carbon, combined with the continued and accelerated warming of our planet over the years, inspired me to shift my research focus toward developing solutions to the climate crisis. Maine is the perfect place to study carbon sequestration in salt marshes because there are so many of them! I have been lucky to have amazing students and colleagues at Bates College to work with on this problem over the years. And I have learned (and am still learning) a lot.

Q: Why should Mainers care about blue carbon?

A: We should all care about blue carbon resources around the world. That's because, much like forests, blue carbon ecosystems (marshes, eelgrass beds, and seaweeds) can be powerful carbon sinks. If you compare the same area of forests to salt marshes, for example, salt marshes can sequester significantly more carbon than forests. They are very effective at photosynthesis and then sequestering and storing that carbon for a long period of time.

And in Maine, we have a lot of them. In August 2023, the EPA released its first regional assessment of the carbon sequestered in these vegetated coastal habitats from Maine to Long Island, New York. Maine and Massachusetts contain by far the most acreage of blue carbon habitat of the northeastern states. Maine has almost 54,000 acres of salt marshes and seagrasses or 25 percent of the overall habitat. We also have the most eelgrass of any of the states surveyed, about 34 percent of the regional total.

So, while it's true our land is dominated by forests and our total area of coastal carbon sinks is small relative to those forests, we do have these blue carbon resources that pack a serious punch in terms of carbon burial.

Q: What questions about blue carbon in Maine would you like to see answered through research?

A: The EPA's regional assessment has given us a solid baseline of carbon content in the upper 30 centimeters of soil. But even since then my students at Bates and I have deepened our understanding of Maine's blue carbon stocks and sequestration. We know that there is much more carbon in marshes than was reported because carbon-rich soils extend 1-2 meters into the subsurface. Furthermore, there is more variation in individual salt marshes than is indicated by the EPA report. We are finding that the amount of carbon stored beneath the surface of a salt marsh is not always consistent with what is predicted by the overlying vegetation. In other words, what you see at the surface is not always reflected underneath. So we need to take a closer look.

We also know that degraded salt marshes can release greenhouse gasses (CO_2 and CH_4) into the atmosphere and adjacent waters, but how much is released and where remains an important area of study. This summer, my colleagues and research group at Bates have added a new portable greenhouse gas analyzer, funded by the Maine Sea Grant, for faster assessments of greenhouse gas uptake and release in tidally restricted salt marshes. It's already helping us answer these questions.

Q: What are some of the biggest opportunities for enhancing Maine's marsh blue carbon potential in the near future?

A: Perhaps the biggest step we as a state can take is to understand, appreciate, and protect what we've already got. This valuable resource is threatened, both by sea-level rise—which can drown and destroy the marshes if it happens too rapidly—and other human impacts. I worry that with current future sea-level rise predictions that these ecosystems may be threatened with extinction. Eelgrass beds and seaweeds are also incredibly effective at taking up greenhouse gases. The decisions Mainers make over the next 10 years are going to determine whether these important ecosystems persist.

We can also work to restore some of the damage that has been done to our blue carbon resource. Tidal restrictions and human involvement in marshes can leave them degraded, subsided, weak, and in the position of releasing (rather than taking up) greenhouse gasses. Restoration of unhealthy Maine marshes can enhance carbon uptake while increasing protection of coastlines and providing healthy habitat for important species that are part of our fisheries and cultural heritage. Marsh restoration is a win-win situation, in other words.

Maine should convene a statewide process by the end of 2025; through collaboration across state agencies, the Wabanaki Nations, and large landowners, this process should develop a landscape conservation blueprint, inclusive of inland and coastal habitats, for the conservation and management of key places. The process should identify important habitat types, taking into account multiple habitat benefits, including blue carbon (carbon storage), habitat connectivity (to allow plants and animals to move across the landscape to find the places they need to thrive as these habitats change over time), biogenic habitats (like eelgrass, shellfish bars, and kelp forests), support for rare species, and the significance to Maine's coastal fisheries. Maine should also secure the conservation of working forests, including productive lands for carbon sequestration and durable wood products, and new conservation within watersheds that drain to drinking water sources to sustain water quality without additional water treatment measures.

Capacity at the state and community levels is essential to meeting Maine's 30 percent conserved land goal. Maine should ensure that agency staffing keeps pace with acquisition and stewardship responsibilities, including land acquisition, grant administration, land management, and monitoring. And the state will need new incentives to expand the network of land acquisition contractors (including appraisers, surveyors, and legal services) and to recruit new conservation workers (land stewards, park rangers, foresters, and ecologists) who reflect the diversity of current and future generations.

2

Develop new incentives to increase forest carbon storage

- **Provide incentives, technical assistance, training, and education to forest landowners, foresters, and loggers to increase the use of climate-friendly practices.**
- **Improve forest carbon data, monitoring, and verification to support forest policymaking and outreach program development.**
- **Continue to engage in a multistate collaboration with state agencies and universities in consultation with landowners regarding the role of forest carbon sequestration in reducing net greenhouse gas emissions.**

Maintaining existing forestland and encouraging climate-friendly forestry practices are critical to achieving Maine's carbon neutrality goal and supporting Maine's economy. Most Maine forestland is located in the state's rural communities, where the forest products industry includes many small businesses, such as logging and contractor businesses and family woodland owners that supply wood markets. Maine forests also provide abundant wildlife habitat while contributing well beyond their boundaries to the health of Maine people through clean air and water.

Climate-friendly forest practices, such as harvesting to create uneven age continuous cover, intensive plantations, and permanent set-asides, store more carbon and help forests become more resilient to climate change. The state should continue to increase technical assistance and provide incentives to forest landowners, foresters, and loggers to implement climate-friendly forest practices and management strategies while maintaining a robust forest economy. This includes assessing and identifying potential incentives for climate-friendly land management, such as expanding Maine's Open Space Current Use taxation program to include incentives for climate-friendly land management; expanding WoodsWISE, a program that offers cost-share

assistance to landowners for forest management planning; and identifying new technical assistance and financial incentives such as assistance to loggers for the cost of skidder bridges to reduce harvest impacts. The availability, content, and geographic focus of carbon offset and practice-based forest carbon programs for forest landowners are evolving rapidly. Maine should explore potential opportunities to increase the suitability and availability of incentive programs for Maine's forest landowners that increase forest carbon sequestration and storage while maintaining a robust forest economy.

The Maine Forest Service (MFS), in collaboration with others, should develop and maintain materials and provide training on extreme weather Best Management Practices, forest carbon offset programs, other revenue-generating forest carbon programs, current use taxation programs, and other strategies. The materials and training should target outreach to specific audiences such as landowners of over 40 acres, new woodland owners, farmers, foresters, and loggers. The Maine Bureau of Parks and Lands should explore the potential benefits of engaging in forest carbon pilot projects that increase carbon sequestration, maintain forest sector jobs, provide new revenue streams for the management of public lands, and contribute practical knowledge on climate-friendly forest management practices.

Maine currently estimates the amount of carbon sequestered by the environment in the state through an informal collaboration between the Maine Department of Environmental Protection (DEP), the Maine Department of Agriculture, Conservation and Forestry, the University of Maine, and other state agencies and research organizations. Maine should identify a more formal and sustainable framework for this collaboration that incorporates new methodologies and data as they become available for Maine.

Considering how important forests are to carbon sequestration, Maine should seek additional resources to enable the MFS Forest Resource Assessment program to work with the Maine DEP and the University of Maine to develop a climate-focused forest data and monitoring program. It would continuously produce the best available information on forest composition, management, harvest activity, and forest carbon sequestration and storage, and identify climate-driven forest health and resilience metrics to better inform climate-friendly forest management practices and public policy decision-making.

Marshlands like this one in the Rachel Carson National Wildlife Refuge in Wells, provides a valuable ecosystem and carbon storage.

Maine should also continue to collaborate with other states, state agencies, and universities in consultation with landowners regarding the role of forest carbon sequestration in reducing net greenhouse gas emissions. Among other benefits, this will help inform the state as it determines how it will account for carbon offset markets in its emissions inventory.

Finally, the state should continue to pursue innovation and new markets for forest products, including options to replace construction materials that have higher emissions footprints. Increasing markets for low-grade wood will help to support the adoption of climate-friendly forest practices. See Strategy D for more details on the opportunity for forest products to meet Maine's climate and economic development goals.

ANDY WHITMAN

MAINE FOREST SERVICE CLIMATE CARBON SPECIALIST

Q: What are climate-friendly forest practices?

A: They're forestry practices that can increase the resilience of forests to climate change, store more carbon, and increase the rate of carbon sequestration. Often they are traditional forestry practices modified to achieve goals for forest carbon and forest resilience. They include:

- Vegetative/silvicultural practices, such as thinning forest stands, retaining certain species, large trees, and deadwood, planting, or controlling invasive plants;
- Structural practices, such as designing access roads, trails, and stream crossings to better withstand new weather patterns like high rainfall events, or to protect trees and forest soils; or
- Planning practices, such as adjusting the timing of activities to avoid barriers due to unusual seasonal conditions, anticipating the arrival of destructive pests, or selecting equipment that is better suited for a particular activity.

Q: Why are climate-friendly forest practices important—and why are they included in Maine's Climate Action Plan?

A: They're important because they help ensure that forests will store and sequester carbon, be resilient for future changes, and continue to provide vital services and products for Mainers. Maine's forests play a critical role as the state's single largest carbon storage pool, with over 2 billion metric tons of carbon. They annually sequester enough carbon to make up over 90 percent of Maine greenhouse emissions. Forest products also help displace much more greenhouse gas-intense materials like concrete with renewable wood. When cared for, Maine's forests are resilient to extreme weather. Forests are critical to Maine's economy and way of life, including its forest products industry, wildlife, recreation, tourism, and a healthy human environment. They support a vast diversity of distinct ecosystems and habitats.

Q: What can individual landowners do to be climate-friendly in their backyard forest — whether they own 0.1 acre or 100 acres?

A: Individual or family woodland owners manage nearly a third of Maine's forests. Many woodland owners already manage their woods using careful stewardship. Landowners can routinely monitor their trees and forests for pests and diseases, prune or remove unhealthy trees, and work with professional foresters and loggers to carry out forest management activities for the long term. Trees and forests take decades to centuries to grow—but careful planning using climate-friendly practices will protect trees and forest resources and foster resilient trees and forests.

Q: As a climate and carbon specialist, how do you help encourage climate-friendly forest practices in Maine?

A: The most important thing is listening to woodland owners, foresters, and loggers and helping them navigate the many considerations for forest management that climate change brings. With all the forest research and the emerging markets for carbon and other ecosystem services, my colleagues at MFS and I are distilling information to help woodland owners, managers, communities, and policymakers make decisions and manage forests.

A key second step is to help woodland owners and resource managers connect with one of our 12 Maine Forest Service District Foresters. District foresters can meet with a landowner to observe the condition of their forest, answer questions, and offer guidance on possible practices and activities. They can also help landowners find key resources, including useful information and planning and incentive programs.

Q: Is there anything important you'd like to add that we haven't touched on?

A: We hope that woodland owners and natural resource managers will make well-informed decisions and understand the long-term consequences of their actions. Climate change can already affect a broad range of forestry decisions. This includes decisions about forest practices and harvesting, family estate planning, program participation by landowners, community planning decisions, workforce training, forest products innovation and investments. Climate change will be with us for the foreseeable future. While there's still a lot of uncertainty, Mainers and their forests will have to and can adapt if they use the best available information.

3

Increase the amount of food consumed in Maine from state food producers to 30 percent by 2030

- **Create a Maine Food Plan to recommend ways to bolster the local food system. The food planning process should center community involvement and collect baseline information about Maine-grown food production and consumption.**
- **Strengthen the viability of Maine farms, fisheries, aquaculture, and other food producers through expanded, equitable, and ongoing access to funding, technical assistance, and processing and distribution infrastructure.**
- **Create more local markets for Maine producers and increase consumers' access to Maine food.**

A statewide food planning process involving the state, academic institutions, and other key institutional players and stakeholders will identify specific recommendations to remove barriers, support growth in the Maine food system, and increase access to Maine-grown and harvested food, including new and expanded funding mechanisms, policies, and programs.

Increased marketing and education about Gulf of Maine seafood species that are less familiar to consumers and incentives for markets and supply chains to sell local species will help increase consumption of Maine seafood. These efforts will build on ongoing initiatives such as Maine's Roadmap to End Hunger and the Seafood Economic Accelerator for Maine, an industry-led initiative bringing together leaders in commercial fishing, aquaculture, and seafood economy to develop an action plan for economic growth, market and workforce development, and greater resilience in Maine's seafood economy.

Connecting Low-Income Mainers with Locally Grown Food

Several nonprofit-led programs connect low-income Mainers with Maine-grown food, improving public health and strengthening the local food economy.

Maine Harvest Bucks enables shoppers who use Supplemental Nutrition Assistance Program (SNAP) benefits to earn additional funds to buy fruits and vegetables at farmers' markets and farm stands. Alternative models of Maine Harvest Bucks' nutrition incentive program also provide a discount on produce purchases at farm stands and community-supported agriculture shares. In 2021, more than 6,000 households spent over $700,000 on local food through the program, which is administered by the Maine Federation of Farmers' Markets, Maine Organic Farmers and Gardeners Association, St. Mary's Nutrition Center, and Cultivating Community.

Farm Fresh Rewards, operated by the Good Shepherd Food Bank, offers shoppers who use SNAP a 50 percent discount on produce at 13 co-ops, farm stands, and small grocery stores throughout the state. Through Mainers Feeding Mainers, the food bank purchases 3.6 million pounds of high-quality local food from 90 Maine farmers and 15 food processors annually and distributes it to food pantries, schools, healthcare centers, and senior living facilities. Twenty-three percent of the farmers are black, indigenous, or people of color, and the program distributes over 50,000 pounds of culturally relevant crops every year.

Maine should continue to prioritize equitable access to Maine-grown foods. Maine already leverages several state and federal funding sources to ensure that Maine foods are available to those accessing supplemental food programs. Lowering market barriers for producers and customers will help all people in Maine have access to high-quality, nutritious, and delicious Maine-grown food. Targeted investments in farms and food system infrastructure will help to strengthen the Maine food system. Supporting local food production will support climate-friendly agricultural practices, including cover cropping, crop rotation, agroforestry, and rotational grazing. Climate-friendly farming practices can increase the ability for soils to store more carbon over the long term. Incorporating these nature-based solutions into farming also enhances biodiversity, improves water quality, and helps restore soils and ecosystems.

FINDING THE FUTURE OF FARMING IN AROOSTOOK COUNTY

By the time Randy Martin came back home from teaching at Gambia College in the West African country of The Gambia to purchase his family's potato farm near Presque Isle in Aroostook County in 1983, he'd learned a few things about preserving soil and the importance of healthy farming practices.

"No potato production here anymore, much to my father's dismay," Martin said. "When I came home from Africa my father thought I'd be farming potatoes. Instead, I started planting trees on the potato fields. He thought I was totally out of my mind."

It was the start of a 30-year career in agronomy and working to make farming practices more sustainable for all growers. His farm is now home to 30 research plots where he experiments and collects data that can help other farmers, and some additional acreage including an apple orchard, where he plants some vegetables and berries. Most of his produce ends up feeding neighbors or going to food banks.

"The Soil and Water Conservation District gave roughly 15-18 tons of fresh produce to Catholic Charities in Maine each summer," he said.

Martin, Executive Director of Central Aroostook Soil and Water Conservation District, has worked in a variety of ways to mitigate soil depletion and help Aroostook County farmers expand their knowledge of viable crops outside of just potatoes. He works to share knowledge of non-traditional agricultural practices.

The Soil and Water Conservation District owns and rents out a no-till seeder that helps growers get seed in the ground while preventing excess runoff. "We have to get growers to stop fall plowing. That's something their father did and their grandfather and their great-grandfather. And that's not an easy feat."

Randy Martin and Maine Department of Agriculture, Conservation and Forestry Deputy Commissioner Nancy McBrady during a tour of the PFAS trial plots at the Central Aroostook Soil and Water Conservation District.

Martin uses wood chips and manure in the District's research plots to increase nutrient levels in soil, and oversees plots growing crops that show potential ways to remove PFAS (which stands for "polyfluoroalkyl substances") from the soil over time. "Some locations in southern Maine have had high concentrations from sewage sludge. In Aroostook, it's from the former Loring Air Force Base, the firefighters' foam that is now leeching off the base into the Lower Aroostook River Watershed."

The District's no-till seeder, which they own and rent out to other farmers, which helps get seed in the ground while reducing runoff and erosion.

Martin irrigates research plots with water from multiple sources that have various concentrations of PFAS. It's part of a four-year study, funded by the EPA, in conjunction with the University of Virginia and the Mi'Kmaq Nation in Presque Isle.

"I'm actually going and getting water from three different contaminated sources, bringing it back to the research farm, which is my farm—watering potatoes, broccoli, kale, and yellow beans, and monitoring what they take up and how much builds up in the soil."

The Soil and Water Conservation District. hope to be able to find ways to harvest and mitigate PFAS and return soil to farmable land again.

Martin is also involved in trying to revive the American chestnut by partnering with the University of New England to propagate a chestnut clone that's 99 percent resistant to chestnut blight.

"I love wildlife, and I see what we're doing to our soil. I know it takes 1,000 years to form one acre one inch deep of topsoil—weathering and whatnot," he says.

He uses that knowledge to look forward and try to create ways for farmers like him to continue to thrive, and not just on potatoes.

"Aroostook County and the State of Maine are poised to be the breadbasket of the Northeast if we pull our head out of the sand. There are a lot of other crops that go hand in hand with potatoes that don't need a lot of different equipment that we could be growing that would improve a grower's bottom line. I hope in the future, we will be more aware of our soil, our soil health, and how the soil is responding to what we're doing, and decrease the amount of chemical inputs without losing yield. It can be done."

—RANDY MARTIN, EXECUTIVE DIRECTOR OF CENTRAL AROOSTOOK SOIL AND WATER CONSERVATION DISTRICT

4

Reduce food loss and waste by 50 percent by 2030

- **Require tracking of food waste and annual reporting by certain facilities that produce large amounts of food waste.**
- **Maximize food rescue, recovery, and donation of edible food through state tax credits, clearer liability protections, and support for donation infrastructure.**

Preventing food waste can reduce Maine's greenhouse gas emissions while saving consumers money and making sure that edible food goes to those who need it. Food that ends up in landfills is a significant source of methane, a more powerful greenhouse gas than carbon dioxide.

The 2024 Food Loss and Waste Study found that 37 percent of wasted food in Maine is generated by businesses and 36 percent is generated by residences.[1] Research shows that measuring and tracking can spur action to reduce waste and costs. Maine should require large producers of food waste who generate at least one ton a week to track and report food waste annually, later expanding to midsize producers of food waste, like those generating half a ton per week. Additional investments in consumer education by waste management companies and educational and community-based organizations can also help reduce food waste.

Food rescue and donation keeps food out of landfills and redistributes it to people who need it, nourishing people and benefiting the environment. Food rescue across Maine is already strengthening communities and reducing greenhouse gas emissions. Expanding these programs with food processing, storage, and transportation, and connecting farms and institutions like schools, prisons, and food pantries, would further reduce waste and emissions.

Federal law provides some liability protections for food donors. Additional legislation to clarify liability protections or to provide state tax credits could boost donation of safe, edible foods that would otherwise go to waste.

Kate Flynn cuts the opening ribbon on the new community refrigerator at the Bear's Den at the University of Maine in October 2023. The refrigerator is stocked with free leftover food for students to take from their dining partner, Sodexo Dining Services.

5

Support farming, forestry, and fisheries industries in Maine in adapting to climate change

- **Promote stewardship of ecosystems that support innovative markets that are resilient to climate change, and grow opportunities in fisheries, aquaculture, forest products, and agriculture.**
- **Maintain and expand equitable access to cultural, traditional, emerging, and heritage industries.**
- **Focus resilience efforts on communities most economically dependent on natural resource industries.**

Natural resource industries are central to Maine's cultural identity and economic health, especially for the state's rural communities. Jobs in these industries often provide financial security and offer pathways for advancement. Maine should ensure that climate adaptation and resilience efforts prioritize the people and communities most dependent on these industries, especially those that lack other economic opportunities.

To promote opportunity and protect against job losses, Maine should help businesses adapt to a rapidly changing environment. For fisheries and aquaculture, this means opening up new opportunities for businesses to diversify by evaluating potential permitting, licensing, regulatory, and management reforms. Flexible and new permitting mechanisms will be needed for emerging species, with cooperation with federal fisheries regulators. Maine will also need to develop new markets for local seafood, including emerging and underutilized species currently in the Gulf of Maine such as Jonah and rock crabs, Maine-grown eels, and black sea bass.

In forestry, growing global demand for climate-friendly wood products continues to be a significant opportunity for Maine. In agriculture, efforts to increase the amount of food consumed in Maine from Maine food producers and harvesters will strengthen Maine's food system and boost the local food economy, on top of continued efforts to boost exports to regional markets.

"Ideally Maine" by Emme Nguyen, age 16

Earlier this year, Climate&Me, the youth-focused initiative of the Maine Climate Council, created the Youth Climate Art Challenge for Maine kids and youth ages 9-22. Participants submitted work representing their perspectives on Maine's climate challenges and solutions, and their vision of Maine's future.

6

Better monitor inland and coastal and marine ecosystems to increase resilience

- **Improve tracking and decision-making by creating new monitoring programs to fill data gaps, including capturing changes occurring in ecosystems and the effects of extreme weather events on people and natural resources.**
- **Increase technical assistance and capacity to provide guidance on climate solutions to communities and natural resources industries, including through nature-based solutions.**

The state should continue to enhance monitoring and data collection of natural and working lands and waters to better understand the impacts of climate change, identify future trends, and monitor economic and social conditions. This includes documenting the current status of Gulf of Maine species, detecting emerging species, and developing emerging fisheries. Ensuring equitable access to the gathering of environmental and climate data will mean including communities in deciding what data are collected and how they are used.

Maine should prioritize monitoring, community engagement, conservation, and increasing resilience in habitat areas that support land and water connectivity, ecosystem health, natural resource industries, and resilience of ecosystems to sea-level rise and other climate change impacts. Funding for habitat resilience and protection should leverage federal funding, especially in communities most vulnerable to climate impacts.

Maine Climate Science Information Exchange

Maine needs current, accurate climate-related research and data to support science-informed decision-making, manage resources efficiently, and strengthen our resilience to climate change impacts. *Maine Won't Wait* recommended establishing a coordinating hub for key climate change research and monitoring. In 2023, the Maine Climate Science Information Exchange (MCSIE) was established at the University of Maine to coordinate the efficient exchange of climate information and response among scientists, support Maine's scientific community and decision-makers, and engage with stakeholders to identify information needs. MCSIE has three areas of specialization: marine ecosystems and coastal communities, agriculture and food systems, and forests and forest products. With funding from Congressionally Directed Spending, MCSIE established initial capacity in each of these areas and began developing a database of current climate science research in and about Maine and a portal to access that information. Funding from the state's new climate resilience grant from the National Oceanic and Atmospheric Administration will continue to support a coastal and marine position for the next five years, and the University is currently pursuing additional funding opportunities.

MCSIE
MAINE CLIMATE SCIENCE INFORMATION EXCHANGE

MARISSA MCMAHAN

COASTAL AND MARINE WORKING GROUP MEMBER

Marissa McMahan can recall the summer that fishing off the coast of her hometown, Georgetown, changed. "It was 2012, and a marine heatwave hit us. All of a sudden, we were pulling up lobster traps with black sea bass in them." McMahan grew up fishing on her father's lobster boat, and she had never seen black sea bass in the traps before. "Talking to the older fishermen who have a historical record of what they have seen in these waters really indicated how big of a deal this was."

McMahan is a fisheries researcher for Manomet and describes her work as a collaborative effort among scientists, fishermen, harvesters, and coastal community members to support marine ecosystems so that fishing can continue to thrive in the Gulf of Maine. "I live and breathe fishing — my father and grandfather are lobstermen, and my partner is a lobsterman. This is a way of life, and I want to ensure that this can be a way of life in the future."

McMahan finds joy and purpose in answering questions in places and communities that have been overlooked. Currently, she is working on a project proposed by shellfish harvesters to understand how rising sea levels will change the average low tide line. "Everyone has focused on the future of the high tide line, yet these clam harvesters rely on the low tide in order to access the mud flats. This is one of the most valuable fisheries in Maine, yet there is still this unanswered question."

While she is trained as a scientist, she often acts as a community organizer, aiming to gain a better understanding of the knowledge that fishermen possess. "They have a different scope on these issues by being out on the water daily for years and years. We are working on 25 projects, and all of them have been co-developed with fishermen and harvesters."

Outside of her work dedicated to supporting marine habitats and working waterfronts, McMahan is a member of the Maine Climate Council's Coastal and Marine Working Group and the Equity Subcommittee.

What gives McMahan hope? Both her work supporting the Maine Climate Council and Manomet have brought her in collaboration with diverse skillsets and perspectives, allowing these groups to arrive at solutions no one individually would have imagined.

"Climate change is overwhelming! Being involved in a community, whether it's a club, group, or committee can create a strong network for exploration and support."

AGRI-CYCLE CONVERTS FOOD WASTE TO RENEWABLE ENERGY

The U.S. Department of Agriculture (USDA) estimated in 2010 that between 30-40 percent of the food supply is wasted each year. To put a dent in food waste that enters landfills regionally, Agri-Cycle, a Maine-based food waste collection service, has been turning it into a valuable resource since 2012, creating clean energy and healthy soil through an anaerobic digestion processor. Since then, the business has expanded to include partner sites and collection routes from rural northern Maine, throughout New England, and the Mid-Atlantic, including food waste from local transfer stations, grocery stores, restaurants, and colleges, powering roughly 3,000 homes annually and growing.

Located on a fifth-generation dairy farm near Exeter, Agri-Cycle works with partners like Exeter Agri-Energy, which processes the food waste effectively using a large-scale system of three anaerobic digesters to mix the collected food waste with manure from the nearby dairy barn. They can then extract the methane gas for energy with a 24/7 continuous feed system. A large press squeezes out the liquid from the mixed waste, which is spread on the fields while the solid byproduct is used as bedding for the dairy cows next door.

"Once the farm has the opportunity to use whatever energy it needs on a daily basis for electricity, the rest, which is a substantial amount, goes into the grid," said Greg Williams, Director of Organics at Agri-Cycle. "The farm doesn't use that much compared to what's being generated."

The Exeter site can generate 70,000 kWh of electricity daily, enough to power as many as 2,500 households annually.

"The reason why we're doing all this is food waste. If it were just thrown in the municipal solid waste stream with typical garbage, it would primarily end up in a landfill, with some exceptions like ecomaine. And when you bury food waste, it generates methane that's released into the atmosphere without any control," said Williams.

Even food scraps redirected from ecomaine, a sustainable food waste management nonprofit, have an impact.

"Even though it's not going to a landfill and creating methane [at ecomaine], it's still very wet, so it's like putting soup on your campfire. It's really hard to burn through because it's just so wet."

Agri-Cycle also has a system to extract food waste that's not fit for human consumption and still in packaging, like cans, bags and plastic containers. That makes it easier and cheaper for large-scale food sites to dispose of their food waste for an efficient use.

Williams sees the diversion of food waste as an opportunity for climate action for individuals and systems alike. "Not everyone can afford an electric car necessarily, but maybe food waste diversion is one of those things that everybody can do," he said. "Anybody can divert their food if they have the space, so it's taken hold pretty quickly, and it's an empowering opportunity to make real change in small doses and collectively."

"It makes no sense when we can do something much more practical with it by capturing methane in a controlled way and making renewable electricity from it."

—GREG WILLIAMS,
DIRECTOR OF ORGANICS AT AGRI-CYCLE

The digester facility at Agri-Energy in Exeter processes food waste to extract methane gas for energy on a continuous 24/7 system.

7

Reduce and capture methane emissions from Maine's waste sector

- **By 2030, develop and implement a strategic plan to reduce and capture methane by keeping food out of landfills and other actions identified by the Maine Department of Environmental Protection's methane study.**
- **Provide subsidies to make methane capture systems feasible for small landfills, incentivize anaerobic digestion and support diversion of food waste, manure, and other high methane-producing materials from waste streams.**

Methane is a powerful greenhouse gas with a warming effect about 80 times more potent than carbon dioxide over a 20-year period. New monitoring technologies suggest that landfills in the U.S. are emitting significantly more methane than has been reported. A 2024 study in Maine will estimate methane generation and identify cost-effective opportunities to reduce and capture methane from waste sources including municipal solid waste, agricultural waste products, and wastewater. This study will inform the development of a plan to reduce and capture methane from these sources. Strategies could include avoiding landfilling high methane-generating organic wastes, technical assistance to facilities, and voluntary opportunities to reduce and capture methane through best practices, like gas capture, biologically active cover, and fire prevention.

Maine's 2024 materials management plan recommends evaluating subsidies for anaerobic digestion and other processes to reduce waste. Nearly 60 percent of landfill methane comes from food, making food diversion key to methane reduction.[2] Landfill biocover made from natural materials like compost or garden waste can reduce methane emissions at landfills, especially for those that are closed.

END NOTES

1 https://www.maine.gov/dep/waste/publications/documents/ME%20DEP%20Food%20Loss%20and%20Waste%20Generation%20Study_RRS_4.1.29.pdf

2 https://www.epa.gov/land-research/quantifying-methane-emissions-landfilled-food-waste

STRATEGY F

BUILD HEALTHY AND RESILIENT COMMUNITIES

The past two years have thrown into sharp relief the impact of climate-driven weather events in Maine communities. Persistent warming trends on land and at sea are generating more frequent and damaging storms, rising seas, flooding, and drought, all of which threaten the lives of Maine's people, their livelihoods in Maine's heritage industries, and our economy and environment.

Maine continues to recover from a series of devastating storms in late 2023 and early 2024 that caused unprecedented damage to infrastructure and communities and claimed four lives. The combined damage wrought by these storms through catastrophic flooding, prolonged winds, and record-high storm tides was estimated to exceed $90 million to public infrastructure alone, on top of the destruction suffered by homes, businesses, and other private infrastructure. Some of the hardest hit areas of the state included rural communities with limited funding and capacity for guiding and implementing recovery projects.

These events further drive home the danger posed by climate change and the urgent need to plan for and invest in climate resilience at the state, regional, and local levels. Maine communities continue to need funding, tools, and support to tackle these climate impacts as they balance the interconnected local challenges of aging infrastructure, the need for more affordable housing, public health impacts, and more.

Empowering Local and Regional Resilience Efforts

The Mills Administration established the Community Resilience Partnership in 2021 to support climate and clean energy action by municipalities and tribal governments. Today, over 225 communities are participating in the Partnership, which has awarded more than $10 million to communities to reduce carbon emissions, transition to clean energy, and become more resilient to climate change impacts such as extreme storms, flooding, rising sea levels, public health risks, and more.

The Maine Office of Community Affairs (MOCA) was established in 2024 to partner with Maine communities to strengthen planning and implementation at the local level. MOCA will serve as a one-stop shop within state government to provide coordinated and efficient planning, technical assistance, and financial support to towns, cities, tribal governments, and regional entities, which will help them better plan for common challenges, pursue solutions, and create stronger, more resilient communities. Programs involving land use, housing, and floodplain planning, as well as building codes, coastal management, and some climate resilience funding and programs will be reorganized into the new office starting in July 2025.

Establishing the Maine Infrastructure Adaptation Fund

The Mills Administration established the Maine Infrastructure Adaptation Fund to provide funding to municipal and tribal governments to adapt critical infrastructure to reduce vulnerability to climate change. Since 2022, the Fund has awarded more than $76 million in grants to Maine communities, including:

- Nearly $20 million in federal funds from the Maine Jobs and Recovery Plan to 13 communities in 2022 to protect vital infrastructure from effects of climate change, including projects to address flooding along ocean and riverfronts, protect stormwater and wastewater systems, and install culverts to reduce flooding;
- $5.4 million to 37 communities in 2024 to support projects that protect vulnerable infrastructure and improve resilience to the effects of climate change, including $4 million for 20 culvert projects in 18 communities; and
- $50 million in recovery funds from Governor Mills and the Maine Legislature to help Maine communities rebuild in the wake of devastating storms in December 2023 and January 2024 and ensure their infrastructure can withstand the impacts of extreme storms in the future. This included $25 million for working waterfront resilience and $25 million for significant infrastructure adaptation, repair, and improvements that support public safety, protection of essential community assets, and long-term infrastructure resilience.

Adopting Official Sea-Level Rise Projections

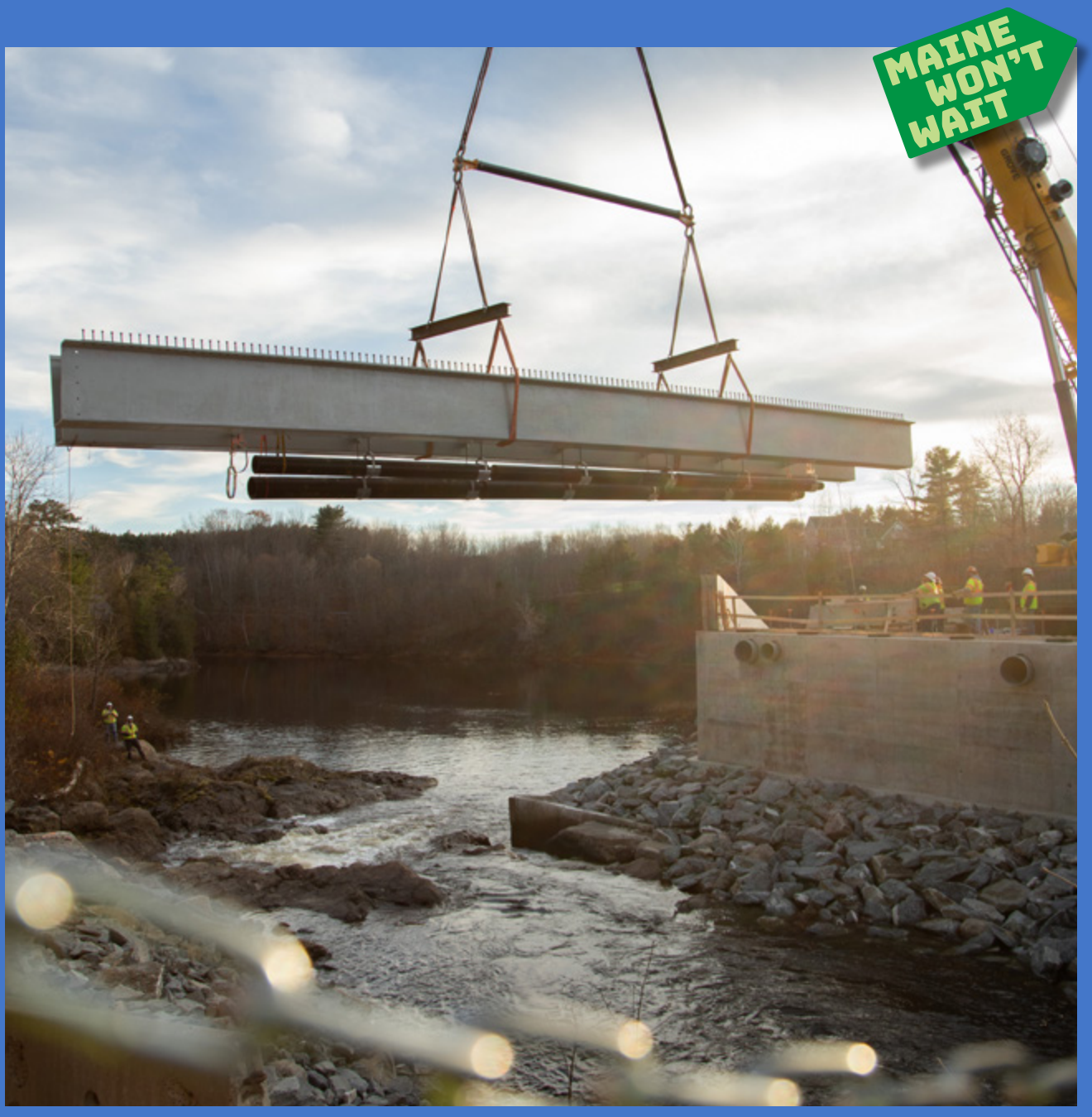
In addition to officially adopting sea-level rise projections, two new laws were passed in 2021 to require that the award of financial assistance is prioritized in communities who prepare climate vulnerability assessments and adopt climate action plans and to add requirements to consider the effect of at least 1.5 feet of relative sea-level rise by 2050 and 4 feet of relative sea-level rise by 2100 when evaluating a potential project under the Site Location of Development Act, within the service area of the Land Use Planning Commission, and the Maine Hazardous Waste, Septage and Solid Waste Management Act. Incorporating these official sea-level rise projections gives communities the common standards and tools they need to adapt waterfront planning, development, risk reduction, and conservation to become more resilient.

Equipping Home Buyers with Information

A new law passed in 2024 requires sellers of real estate to disclose whether their properties are in a digitally mapped Special Flood Hazard Area, according to the Federal Emergency Management Agency, or were damaged by flood or received disaster-related aid during their ownership. This law protects home buyers by giving them more information about the flood risk of their potential purchases.

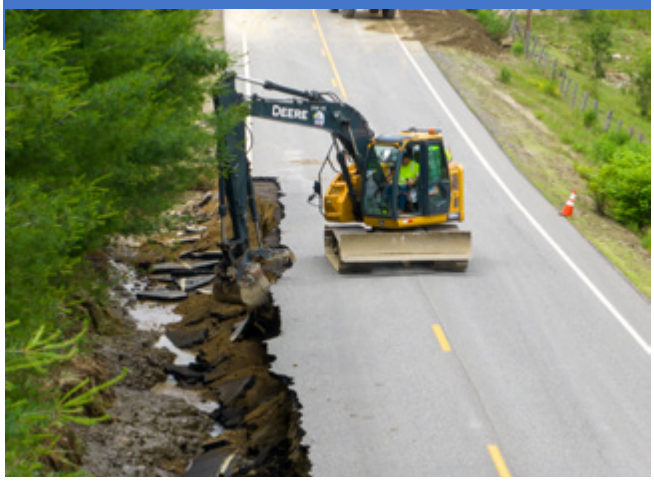
Assessing Climate Vulnerability to Reduce Risks

The Federal Emergency Management Agency awarded the Governor's Office of Policy Innovation and the Future $809,000 to assess the vulnerability of state infrastructure to climate impacts. The recently updated 2023 Maine State Hazard Mitigation Plan provides an assessment of risk from natural hazards including climate impacts, as well as strategies to reduce risk.



Infrastructure Rebuilding and Resilience Commission

The Infrastructure Rebuilding and Resilience Commission—created by Governor Mills through executive order in May 2024—is reviewing and evaluating Maine's response to the devastating 2023 and 2024 storms, identifying crucial areas for near-term investment and policy needs, and developing the state's first long-term infrastructure plan to ensure that Maine is ready for the harsh storms ahead. The Commission, composed of individuals with expertise in infrastructure, construction, engineering, electrical utilities, floodplain management, financing, philanthropy, emergency response, and climate science, released their interim report in November 2024. Recommendations align closely with the *Maine Won't Wait* 2024 update, and provide further detail on topics including funding, community support, data sharing, vulnerable infrastructure, energy resilience, and regulations that support rebuilding with resilience. The recommendations also identify gaps in funding and financing resources, propose new approaches to improve disaster recovery and response in the state, and strengthen resilience supports at the state, regional, and local levels. The Commission will release its long-term resilience plan for Maine in May 2025.



1

Increase local capacity for climate resilience

- **Expand investment in grants and assistance to communities, so that by 2030, 80 percent of Maine communities are enrolled in the Community Resilience Partnership (CRP) and have received grants through the CRP or the Maine Infrastructure Adaptation Fund (MIAF).**
- **Help communities strengthen communication networks before, during, and after disasters, especially for people who traditional channels may not reach.**
- **Develop and share guidance with communities to help reduce the risks to development in areas vulnerable to wildfire, severe storms, extreme heat and cold, or other climate-related hazards, including tools to help communities and people "get out of harm's way."**
- **Increase local and regional capacity for management of storm debris and household hazardous wastes.**

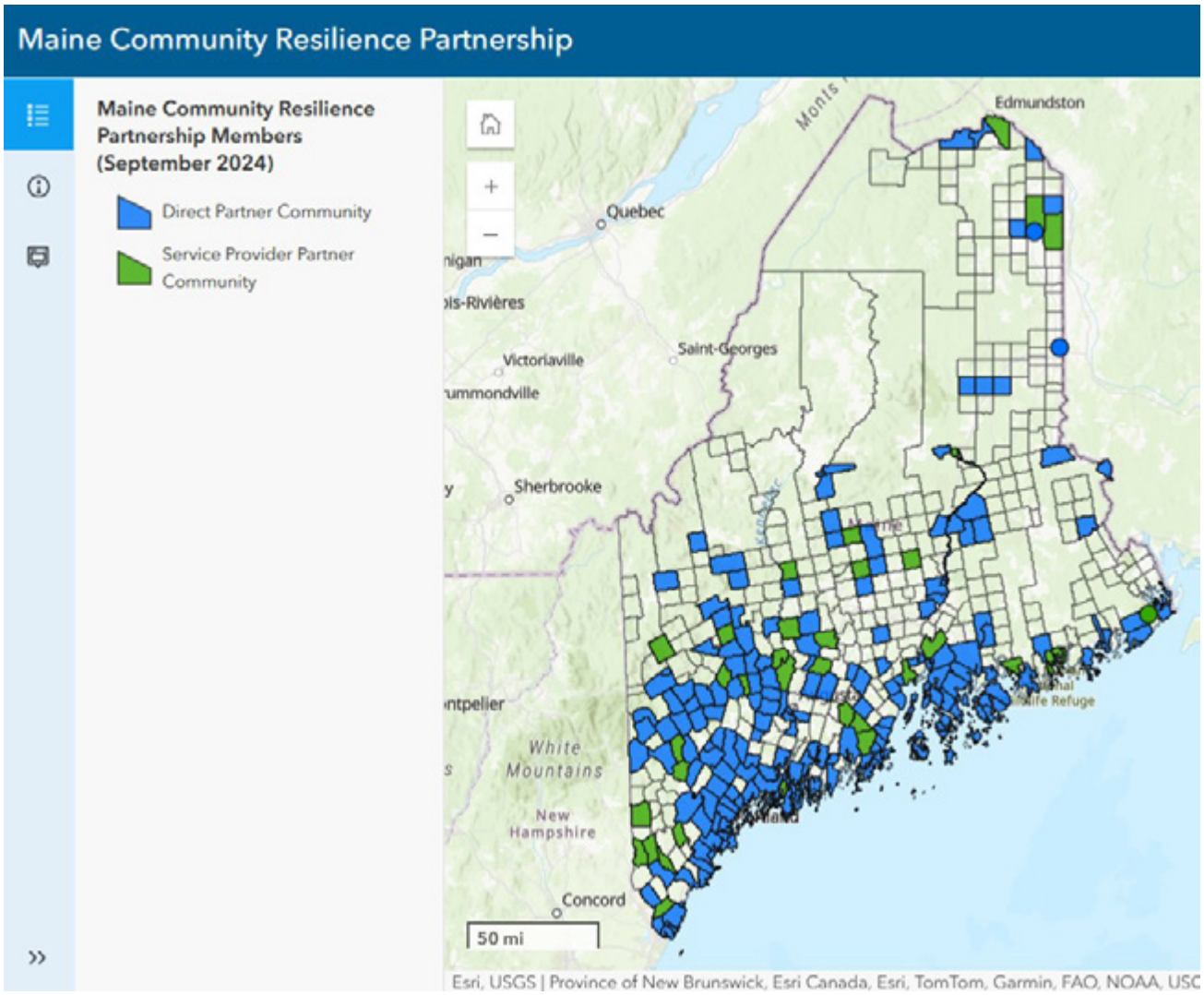
Programs like the CRP and the MIAF have helped communities take meaningful steps toward establishing climate and energy priorities, planning to reduce risk, and addressing urgent infrastructure improvements. Sustained funding and assistance, with a focus on leveraging federal investments, will help communities conduct vulnerability assessments, develop strategies that consider the full spectrum of options for reducing risk, and continue to make necessary improvements to infrastructure and regulations. These programs and others should encourage plans and projects that protect access to vital economic infrastructure, like working waterfronts, and that integrate nature-based approaches to risk management, such as marsh conservation, dune stabilization, and river corridor protections.

As Maine communities confront natural disasters and plan for climate impacts, they need proactive long-term planning and tools to engage residents in

difficult conversations about reducing risk. These conversations should embrace local knowledge, collaborative learning, and deliberation with a particular focus on including those most at risk from climate impacts.

In preparation for emergencies, the state should help communities establish consistent and effective communications for before, during, and immediately following extreme weather events. Communities should follow best practices for reaching a broad array of residents, such as using accessible language and technologies, translating information into multiple languages, and using many different methods of communication including radio, television, social media, and other networks.

As Maine communities develop climate resilience plans, a number of tools and incentives can help them put those plans into action. Increasing the number of property owners who have flood insurance policies and the number of communities that participate in the National Flood Insurance Program will expand the resources available for recovery from flood disasters. Increasing municipal participation in the Federal Emergency Management Agency Community Rating System incentive program will lower flood insurance premiums for policyholders in those communities by up to 45 percent. Other potential tools could include a voluntary "buyout" program that pays property owners the market value of their property so they can move to a safer location when they decide that options like insurance or adapting in place no longer make sense. Such a program needs to balance risk reduction with other potential local concerns such as identifying safer areas, maintaining the sense of community, ensuring sufficient affordable housing, and impacts to municipal budgets.



Storm debris management can prevent building and other materials from ending up in waterways, which protects public safety, waterfront infrastructure, and the environment. The state should take a comprehensive approach to storm debris management, including supporting municipalities to plan ahead and register temporary debris-management sites and adopt early warning systems; updating the state's Debris Management Plan; providing regional staff capacity; and organizing qualified volunteer networks to assist in debris management after storms.

2

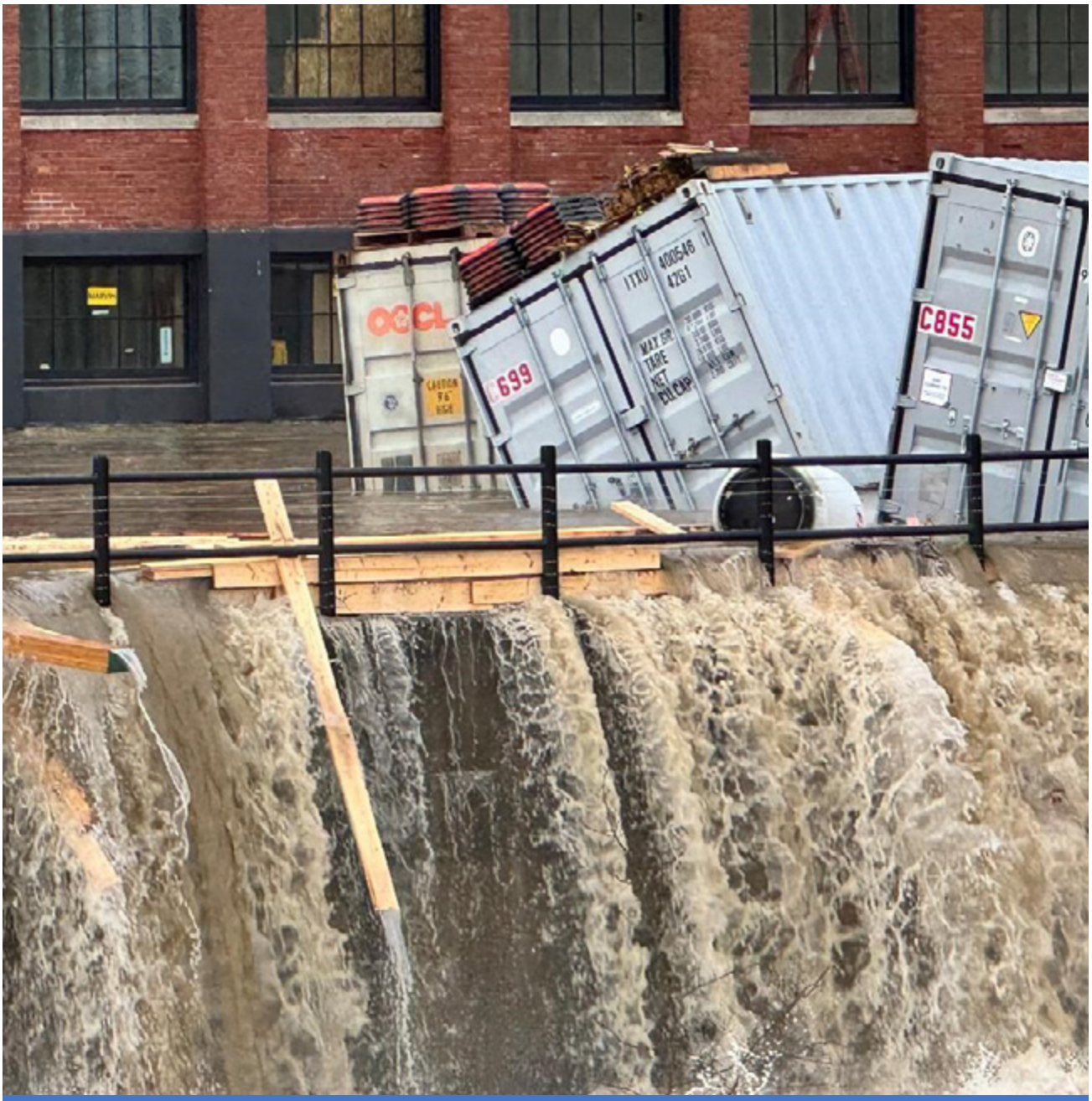
Improve Maine's preparation for and recovery from natural disasters

- **Increase capacity for disaster planning and management at state, county, and local levels.**
- **Support planning and decision-making that reduces exposure to natural hazards and climate vulnerabilities.**
- **Establish a framework for measuring the effectiveness and equity of adaptation and resilience actions.**

Maine endured a record number of natural disasters in the past two years—a trend the state must prepare to see continue. Emergency management often falls to relatively small teams or individuals at the state, county, and local levels. This includes planning and readiness, in-the-moment disaster response, long-term recovery for individuals and communities, and proactive measures that reduce the risk of damage from future natural disasters.

Increasing capacity and resources for emergency management at all levels of government will ensure the state and communities are prepared for more frequent storms and better positioned to recover. Investing in increased capacity to manage disaster events and proactive hazard mitigation efforts at the Maine Emergency Management Agency will benefit communities and maximize federal funding opportunities like the Safeguarding Tomorrow program for risk reduction and community resilience projects.

Building capacity also includes providing better information, training, and communication about climate hazards to first responders and communities, so they can plan and prepare for the rising frequency and severity of storms and floods, as well as emerging



Federal Funding Spotlight: Historic Resilience Grant Positions Maine to Meet the Climate Crisis Head On

In 2024, Maine won a $69 million grant through the National Oceanic and Atmospheric Administration's highly competitive Climate Resilience Regional Challenge to protect Maine's communities, environment, and working waterfronts from extreme storms, flooding, and rising sea levels. This represents one of the largest investments in climate resilience in Maine history. Over the next 5 years, these grant funds will prove vital to advancing the strategies of *Maine Won't Wait,* including expanding support for local planning and projects to address climate effects through the Community Resilience Partnership, supporting investments in critical infrastructure projects, and bolstering efforts to protect vulnerable coastal and inland ecosystems through natural climate solutions, flood modeling, and community efforts.

Maine Establishes Office of Community Affairs to Partner with Communities

Across Maine, communities are contending with increasingly complex challenges, from impacts from climate effects like extreme storms, flooding, and rising sea levels, to a chronic housing shortage and demands from population growth.

These challenges demand greater coordination across state agencies. At the same time, an unprecedented amount of federal support now exists to support communities to address them.

In 2024, the state established the Maine Office of Community Affairs (MOCA), a new standalone state office that will partner with Maine communities to strengthen planning and implementation at the local level. MOCA will serve as a one-stop shop within state government to provide coordinated and efficient planning, technical assistance, and financial support to towns, cities, tribal governments, and regional entities, which will help them better plan for common challenges, pursue solutions, and create stronger, more resilient communities.

The new office will work in partnership with communities and regional organizations to pursue comprehensive solutions that benefit Maine's people, economy, and environment. It will reorganize existing state programs and resources and retain current state staff to help to unlock these opportunities, especially for the smallest and most under-resourced communities, by supporting the delivery of robust planning and technical assistance, coordinating resources across agencies, and ensuring that state interactions with communities are consistent.

Programs involving land use, housing, and floodplain planning, as well as building codes, coastal management, and some climate resilience funding and programs, will be reorganized into the new Office starting in July 2025. This includes:

- Climate Resilience: Community Resilience Partnership, Maine Coastal Program, Maine Floodplain Program
- Land Use Planning: Municipal Planning Assistance Program
- Housing Planning: Housing Opportunity Program, MUBEC/ Code Enforcement
- Volunteer Maine

The Maine Office of Community Affairs will include a newly established state resilience office and staff, supported by the historic $69 million climate resilience grant awarded to Maine in July 2024 by the National Oceanic and Atmospheric Administration.

hazards such as extreme heat and wildfire. Increasing and coordinating opportunities for qualified volunteers to assist before, during, and after disasters builds capacity and strengthens communities. Planning and decision-making that reduces exposure to natural and climate hazards is far more effective than rebuilding after a disaster.

According to national estimates, every dollar invested in lessening the impact of disasters saves about $13 in future costs of damage and recovery.

Expanding climate vulnerability assessments to include not only physical infrastructure but also social support networks, threats to public health, and natural resources will help the state and communities better anticipate change and take proactive measures to protect public safety. These assessments should blend community knowledge with data and tools that illuminate gaps in knowledge and future conditions. Requiring communities in floodplains to draw on available vulnerability assessments and hazard mitigation plans when determining where to locate new infrastructure could avoid adding new risk. Increasing the use of nature-based solutions, particularly for bluff and dune management, in community-led projects and local ordinances can provide protection, natural amenities, and ecosystem benefits.

How does Maine know if we are becoming more resilient to climate change and natural disasters? The ultimate test would be a major disaster that exposes which resilience strategies were successful in avoiding damage and which were not. The state must take a more proactive approach, measuring progress and testing assumptions at regular intervals, both in periods of calm and following natural disasters. The state should, in collaboration with stakeholders, develop a resilience framework that measures the effectiveness and equity of policies, actions, and investments in resilience, providing feedback that allows strategies to adjust and adapt over time.

3

Expand access to funding and financing for climate adaptation

- **Expand finance options to ensure sustainable funding and financing for climate-ready infrastructure and adaptation projects. Study the feasibility of a "Resilience Bank" and other finance tools by 2026.**
- **Simplify and coordinate state grant application processes, including a common access portal for information about state grant programs, by 2026.**

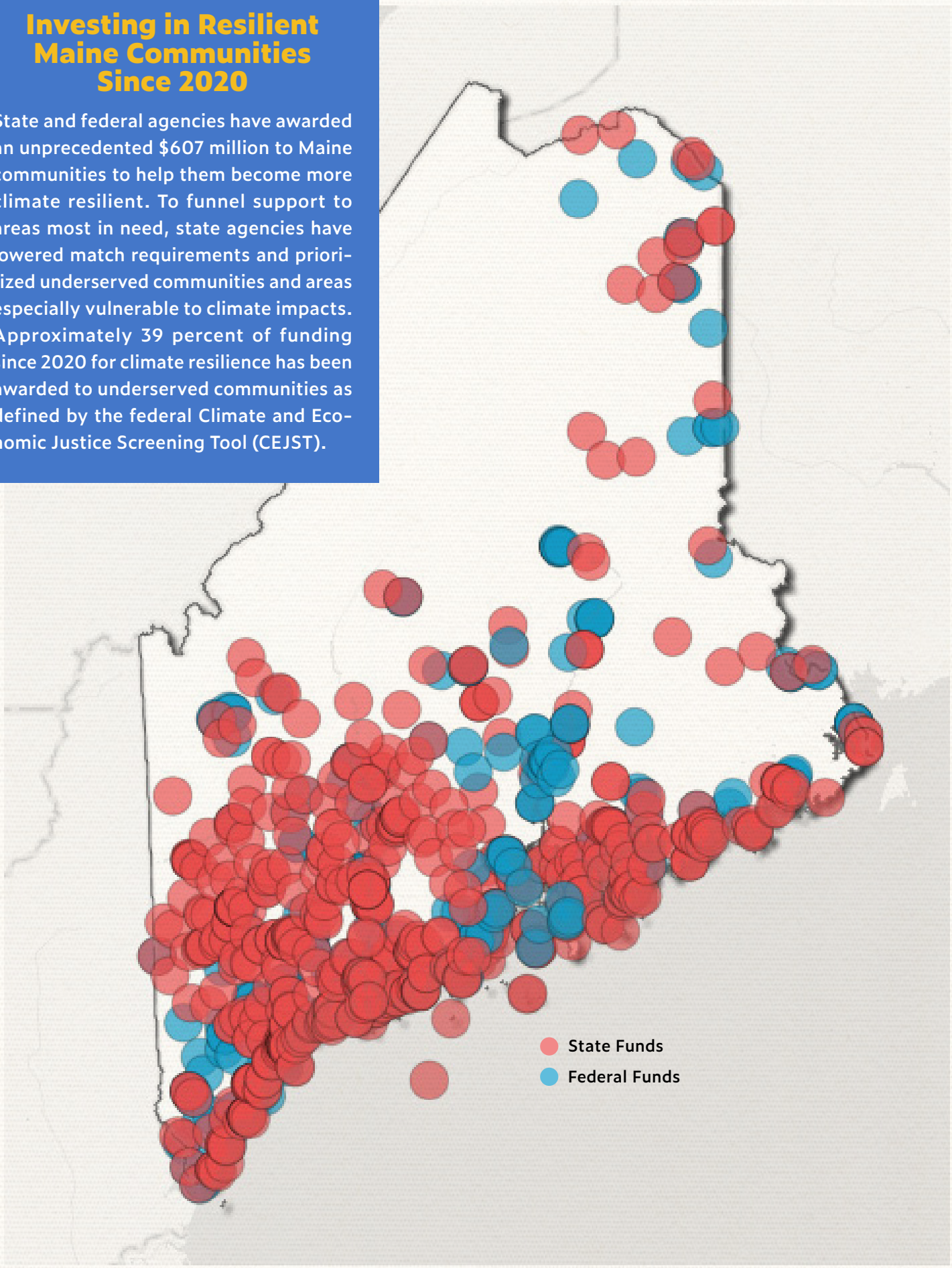
The Community Resilience Partnership and Maine Infrastructure Adaptation Fund were established to support locally and regionally significant resilience projects. The state and federal government have invested more than $600 million in resilience efforts across Maine communities through these and other programs since 2020. While these investments are significant, the disastrous storms in 2023 and 2024 demonstrated that Maine must substantially increase investments in community resilience and climate-ready infrastructure and expand access to funding for communities.

"It can be a challenge at the town level, moving toward the future together. Feeling like you're part of the process is so huge, and acknowledging that you can either let change happen to you or you can help drive the change in a way that helps you."

— DENISE CILLEY, SELECT BOARD MEMBER FOR TOWN OF JONESPORT, ON RESILIENCE IN THE FACE OF EXTREME STORMS

Investing in Resilient Maine Communities Since 2020

State and federal agencies have awarded an unprecedented $607 million to Maine communities to help them become more climate resilient. To funnel support to areas most in need, state agencies have lowered match requirements and prioritized underserved communities and areas especially vulnerable to climate impacts. Approximately 39 percent of funding since 2020 for climate resilience has been awarded to underserved communities as defined by the federal Climate and Economic Justice Screening Tool (CEJST).



A resilience bank with access to private capital could augment public investments in resilience. Large and complex community projects—such as protecting wastewater treatment plants from flooding or elevating waterfront infrastructure above storm surges—currently must pull together multiple sources of state and federal funding. A resilience bank could speed projects to completion with financial tools, underwriting, and administrative expertise matched to the complexity of the projects.

To improve access to existing state grant funds, the state should create a single common access portal for information about grant programs, funding uses, eligibility, and application deadlines. Agencies should explore ways to make grant funding more accessible to underserved communities and communities most vulnerable to climate impacts. This may include simplifying application forms and processes, creating streamlined deadlines and contracting processes across agencies, and targeting assistance for proposal development and grant writing to under-resourced communities, including connecting applicants to organizations that can assist them.

STUDENTS MEET CLIMATE DEVASTATION WITH ACTION IN JAY

"Teachable moments happen when kids take what they're learning and then can almost immediately apply it to their own lives," Envirothon Teacher Robert Taylor, at Spruce Mountain High School in Jay.

At Jay's Spruce Mountain High School, students are putting climate education into practice by competing in Envirothon, run by the National Conservation Foundation. After winning its 12th state championship in 2023, the all-star team began preparing for the international championship in Canada, working with the Governor's Office of Policy Innovation and the Future to learn more about climate adaptation.

As the team was packing their bags for Canada that June, Jay experienced devastating damage from some of the worst rainstorms the town has ever seen. An estimated five to six inches of rainfall in under three hours destroyed roads, blew out culverts, and inundated driveways. More than a year later, the town is still recovering.

Shaken but undeterred, the Spruce Mountain Envirothoners, led by Taylor, went on to place 16th in the world in 2023 for their work at the international championship in Canada. Even in the face of climate devastation in their hometown, these students are excelling in education and action.

4

Help Maine people prepare their homes, schools, and businesses for climate change

- **Leverage building codes and standards, energy efficiency, education, and outreach to help people prepare their homes for climate change, especially low-income families and those with health risks.**
- **Increase funding, financing, and outreach for small-scale clean energy and storage options (including electric vehicle batteries that are used as energy storage) that can provide electricity during power outages.**
- **Identify funding to expand programs that help prevent spills from residential oil tanks.**

To help homes and businesses become more resilient to climate change, state and local governments should increase efforts to educate and inform Mainers on ways to prepare for extreme weather events. This includes helping households understand, for example, how to take important steps such as having flood insurance and a sump pump with a battery backup, or basic ways to prepare for extended power outages.

Many actions that reduce greenhouse gas emissions can also make homes and businesses healthier, safer, and more resilient to climate change. Building and energy codes address resilience through insulation, fire resistance, structural integrity, indoor air quality, and more. The Federal Emergency Management Agency has estimated that building to the International Building Codes in Maine has prevented $1.7 million in annual average avoided losses due to damages from hurricanes and flooding since 2000.[1] Recent versions of the International Energy Conservation Code include requirements related to mechanical ventilation systems, which address problems that can lead to respiratory ailments, such as mold and mildew.

Heat pumps and weatherization also can address health concerns related to climate change. Heat pumps can filter air inside the home, which can protect against wildfire smoke and other indoor and outdoor air pollutants. Heat pumps also provide efficient cooling to reduce the impact of extreme heat. Weatherization, when paired with necessary health and safety upgrades, can lead to more livable homes and improved general health.[2] The state should continue to provide assistance for heat pumps, weatherization, and pre-weatherization and invest in health and safety remedies and mold abatement and prevention for low-income Mainers.

Building-scale renewable energy and storage, including electric vehicle batteries when designed for vehicle-to-home charging, can reduce emissions and energy bills while powering homes, community locations, and businesses during power outages caused by extreme

Preparing Communities for Extreme Heat and Cold Events

The Maine Center for Disease Control and Prevention (CDC), Maine Emergency Management Agency, and others are collaborating with communities to support preparedness and response planning for extreme heat and cold events. Maine CDC has worked with county emergency management agencies to develop, update, or expand their plans for how these agencies and partners will respond during an extreme heat or cold event. These plans lay out chains of command, best practices for opening and running cooling or warming centers, and information on how to reach and protect vulnerable groups. Maine CDC is also developing a Community Resilience Guidebook that town and municipal leaders and staff can use to get their communities more prepared for and resilient to extreme heat events.

weather. See Strategy C for more details about how Maine can expand access to funding, financing, and education for clean energy and storage.

Flooding associated with extreme storm events has dramatically increased the number of oil spills from residential heating oil tanks, threatening human health and the environment.[3] To mitigate these risks, funding for the removal and replacement of residential heating oils administered by the Maine Department of Environmental Protection should be expanded to include residential heating oil tanks at low- and moderate-income homes in areas with flood risk. Transitioning to heat pumps will reduce the risk of basement oil spills in Maine homes and increase resilience to flood impacts.

5

Protect critical working waterfront infrastructure

- **Preserve and expand working waterfront access, including intertidal access. Develop a statewide working waterfront strategy by the end of 2025 to address funding and data gaps and increase protection options as well as publicly accessible infrastructure.**
- **Fund improvements that protect against climate impacts, including clean energy installations that make businesses more resilient during power outages, and address workforce and contractor capacity gaps.**
- **Support communities to protect working waterfronts by using planning and zoning strategies, investing in working waterfront infrastructure that meets community needs, and increasing public understanding about the economic and cultural importance of Maine's working waterfronts.**

Maine's coastal communities, working waterfronts, fisheries, and aquaculture businesses are directly impacted by climate change, including sea-level rise, storm surge, and the rapidly changing Gulf of Maine ecosystem. Severe storms in January 2024 amplified these impacts, causing disastrous damage along the Maine coast, including locations where heavy wind, rain, and flooding destroyed homes and roads and devastated docks, wharves, and piers.

Maine's working waterfronts are vital to the state, both economically and culturally, and access to the ocean is crucial to Maine's identity. Maine needs a statewide strategy that charts a path forward to protect and strengthen public and private working waterfront access. The strategy should address funding and data gaps and increase public infrastructure.

To build resilient coastal communities and protect public working waterfront infrastructure, Maine should make significant investments in wharves, piers, and other structures to make them more resilient to future storm events. This should include clean energy investments such as solar and battery storage that can reduce operating costs for working waterfront businesses and help keep the lights and heat on during power outages.

Given the large role private infrastructure plays in the marine sector, Maine should increase technical assistance for privately owned working waterfront businesses and properties, including making information about resilience upgrades widely accessible and understandable. Economically strong fisheries and aquaculture businesses will be better positioned to invest in and maintain private infrastructure, so efforts to help businesses adapt to climate impacts and access new markets also support resilient working waterfronts.

Increased contractor capacity, particularly in marine construction and the engineering, planning, and permitting components of these projects, will be critical. The state should document lessons learned from responses to recent storms and work with workforce training organizations, community colleges, coastal industries, and others to train people with existing skills to apply them in the coastal and marine context and to develop a pipeline strategy for increasing the number of people in the state with skills and experience to manage coastal construction and restoration efforts.

"We've always had storms, but storms are more out of the south and southeast now, and out of that direction, a lot of our harbor is unprotected."

—COMMERCIAL FISHERMAN IN SPRUCE HEAD

6

Strengthen public health monitoring, education, and prevention

- **Increase funding for additional air-quality monitoring stations in more regions of the state.**
- **Aid communities to establish emergency warming and cooling centers to address extreme temperatures.**
- **Increase assistance to communities to plant trees in urban areas where "heat islands" are most likely to occur.**
- **Assess and communicate the potential spread of water-borne illnesses in the ocean, freshwater, and public drinking water systems, especially following severe weather events.**
- **Strengthen monitoring of diseases spread by ticks and mosquitoes and build public understanding of these diseases and their risks.**
- **Increase our understanding and monitoring of injuries, health conditions, diseases, and overall public health following natural disasters.**

Our understanding of links between climate change and human health continues to expand. Public health monitoring, education, and prevention should expand to include indoor air quality, additional drinking water safety measures, and exposure to extreme heat and cold temperatures. Addressing these climate-related health concerns will benefit individuals and households, especially people at higher risk due to pre-existing health conditions, economic insecurity, or housing quality issues.

Maine should increase the number of air quality monitors across the state to assess impacts of wildfire smoke on rural communities, particularly in areas of the state lacking these monitors. As part of education and outreach related to climate and health, the state should further promote the Maine Department of Environmental Protection's air quality alert system.

Extreme heat and higher nighttime temperatures are a health risk, particularly for outdoor workers, people with pre-existing conditions, and older Mainers. While heat pump heating and cooling systems are one solution for reducing individuals' exposure to high heat, public spaces can also serve as a refuge for those seeking relief from the heat. Encouraging communities to establish emergency warming, cooling, and clean air centers will give people a safe option for relief from extreme weather. Ensuring that these centers are accessible, energy efficient, and use clean energy where feasible can reduce emissions while protecting people especially at risk from climate impacts. Tree plantings can provide shade from the sun and reduce the "heat-island" effect in Maine's urban areas.

Algae and invasive species are spreading due to warmer waters. In a warming climate, Maine's marine and freshwater environments and drinking water sources may be exposed to water-borne diseases, invasive species, and flooding-related contamination that pose public health risks. The risks of illness from water-borne diseases and harmful algal blooms should be assessed, monitored, and communicated. Expanding the monitoring of public drinking water sources, especially after severe storms, for bacteria, saltwater intrusion, and wellhead contamination from flooding can proactively identify and mitigate potential public health risks. The state should also continue investing in improvements to wastewater infrastructure that reduce threats to public health.

The environment, changing climate, and rise of vector-borne diseases such as those caused by ticks and mosquitoes are interconnected. Maine should build a more robust vector-borne disease monitoring network across the state to help the public and stakeholders manage risk associated with disease and take action to prevent these infections. This includes both measuring human disease and monitoring "vectors" such as ticks and mosquitoes as well as other species that host these diseases. This will help us to understand the impact of vector-borne diseases, detect early signs of outbreaks, and identify information needed for timely response.

Strengthening our understanding of how disease spreads following disasters will increase our ability as a state to assess the short- and long-term effects of disasters, which help guide emergency response, recovery efforts, and predict consequences of future disasters. During a disaster, conducting monitoring to determine the extent and scope of health impacts allows us to evaluate potential problems related to planning and prevention and identify risk factors, track disease trends, determine action items, and tailor interventions.

7

Increase awareness and action on the mental health impacts of climate change

- **Strengthen connections between disaster planning and mental health services with a focus on youth, first responders, and other affected groups.**
- **Provide training, assessments, educational materials, and funding across healthcare services to address mental health impacts related to climate change.**

StrengthenME Extends a Helping Hand During Storm Recovery

Shortly after the December 2023 storms that caused catastrophic flooding and prolonged power outages throughout Maine, Shannon Glover was working at a soup kitchen in Oxford County's River Valley when she met an individual who was struggling. Glover is an outreach worker with the State of Maine's StrengthenME Storm Response, a free and anonymous program for severe weather survivors that provides outreach, support, and connection to mental health and resilience resources and services.

The individual told Glover that their spouse had died just days before the storms hit. They couldn't bring themselves to share more with Glover that day but asked her to return in a week. She did, offering emotional support and connection to resources as the person expressed hopelessness about moving on from the combination of such devastating events. Glover later learned that her support was key to the individual getting back out into the community and even applying for and securing a new job. The person returned to the soup kitchen to personally thank Glover for her help.

"Being able to provide a safe and accepting place for individuals to share their experiences helps their healing process," Glover said. "Although all residents of the River Valley were in the same storm, not everyone went through it with a support system. StrengthenME offers support for anyone needing a hand up in their recovery."

- **Establish programming and education for schools and communities to build resilience, agency, and hope regarding climate change.**

Climate change weighs on the mental health and emotional wellbeing of many people across Maine. When natural disasters strike, people whose families and livelihoods are upended can experience mental health traumas. First responders and municipal officials frequently and repeatedly navigate mental and emotional stresses while safeguarding their communities. Less acute climate impacts such as environmental changes and harm to Maine's natural resource industries can lead to the accumulation of mental health stress over time. Feelings of powerlessness can diminish hope for a safe and prosperous future, especially among young people.

Increasing awareness about mental health impacts of climate change among healthcare providers, educators, first responders, and community leaders is an important first step. Conducting assessments of mental health preparedness within communities, emergency response organizations, and social service providers can highlight needs to be planned for ahead of a disaster or emergency, especially for communities facing significant storm impacts and for emergency and frontline workers.

Resources to prevent and address mental health impacts of climate change should flow in two directions. "Top down" approaches include training and support programs for clinicians, healthcare providers, emergency responders, educators, and faith leaders. "Bottom up" approaches supplement professional services and normalize seeking mental health support for climate change impacts through peer counseling, community listening sessions, support groups, and volunteer engagement. Importantly for youth, providing information and programming in climate education curricula and service-learning for high school students in developmentally appropriate ways will support resilience, agency, and hope.

Communities Get Help Planning for Smart Housing Growth

The 2023 "State of Maine Housing Production Needs Study" found that Maine needs 38,500 additional homes to meet unmet demand, following underproduction of homes over the past decade. This represents about a 5 percent increase in Maine's total housing inventory. To meet future needs, Maine also needs between 38,000 and 46,000 additional homes by 2030, the study found.

Housing development that promotes convenient, walkable, and bikeable communities reduces the need for driving and commuting. In 2023, the state took important steps towards encouraging affordable housing development and housing density, especially in areas identified by communities for growth. P.L. 2021, ch. 672 (LD 2003) allows increases in housing density and requires municipalities to allow accessory dwelling units to be located on the same lot as a single-family home, under certain conditions. It also created the Housing Opportunity Program at the Maine Department of Economic and Community Development to support community planning for smarter growth, including housing units that are affordable for low-income and moderate-income individuals. The Housing Opportunity Program provides technical assistance to municipalities to support housing development and funding to service providers and municipalities to support municipal ordinance development, planning boards, and public processes to increase housing opportunities.

8

Promote and incentivize land use strategies that help communities avoid future transportation emissions, conserve natural and working lands, create affordable housing, and meet the state's clean energy goals

- **Promote and incentivize compact development near community centers, through neighborhood-level land use planning, building in already-developed areas with vacant space, and redeveloping existing buildings.**
- **Promote siting of clean energy and electric-grid investments that utilize existing infrastructure and seek to minimize impacts to sensitive natural areas and farmland.**
- **Develop incentives and regulations to encourage local land use policies that provide measurable benefits to communities while meeting climate goals.**
- **Expand capacity at the state, regional, and local level to provide technical expertise to support communities in effective land use planning. Utilize the new Maine Office of Community Affairs to help communities align local land use policies with state priorities, including housing and climate goals.**
- **Support community engagement efforts and communications strategies about the benefits of effective land use planning to meet housing, clean energy, conservation, and resilience needs while supporting economic growth.**
- **Avoid growth in areas at risk of flooding, sea-level rise, storm surge, or other climate-affected hazards. Provide support for local planning processes that protect sensitive natural areas and habitats to ensure Maine's natural systems remain healthy and resilient.**
- **Support state and regional tools and resources that provide accurate and detailed data to support planning and inform decision-making; for example, high-resolution data for conservation, land use types, and demographic information or data about economic and community benefits to inform siting decisions.**

Maine has promoted a thoughtful approach to land use planning for more than 30 years through the state's Growth Management law, which establishes goals for the planning and regulatory actions of municipalities through the development of local Comprehensive Plans. Land use planning provides opportunities for communities to increase resilience to climate impacts while reducing transportation emissions, protecting the state's natural and working lands, addressing the urgent need for housing, and meeting the growing need for clean energy. These principles are more critical than ever given increasing climate risks, the imperative to reduce emissions, and the need for more housing in areas with existing services and infrastructure.

Maine's affordable housing shortage limits options for people to relocate out of vulnerable areas, in addition to making it difficult for employers to attract local workforce. When encouraging the development of new housing, Maine should incentivize land use policies that increase opportunities for walking and biking through compact development, reducing the need for residents to drive and ultimately reducing emissions from vehicles. To encourage compact development, communities can encourage the repurposing and rehabilitation of existing buildings and vacant lots, increase density allowances in areas with services, support multiuse development that provides services, office space, retail, and housing, and loosen size and parking requirements. Communities can also locate school and municipal buildings to facilitate public transportation connections, walking, and biking.

Land use planning should also protect natural and working lands from development. Maine's natural and working lands—including tidal marshland, forests, and agricultural land—provide many benefits, such as protecting from flooding, storing carbon, and preserving

critical habitats. They also support livelihoods, food production, and recreational and cultural uses.

Siting clean energy projects, such as solar, near the demand for power (such as in more densely populated areas) can conflict with the need to protect valuable natural and working lands in some areas of Maine. Mitigation fees for the environmental impacts of solar development can impact private landowner value and increase costs for solar developers and tend to move projects into more remote regions away from necessary electrical infrastructure. A more comprehensive approach should include a planning process that signals preferred locations for projects, like the expedited wind energy permitting zones established in 2010. The approach should identify potentially preferred areas for solar development (including certain brownfields and reclamation sites) and proximity to the power grid connections. Building a more comprehensive process will benefit communities, landowners, energy developers, and electricity consumers.

At the local level, to balance the many pressing land use needs in Maine, the state must incentivize local policies and processes that help meet communities' intersecting concerns. This includes neighborhood-level land use planning and improvements to zoning and permitting processes that allow projects to move forward when they have tangible benefits to communities and the climate. Programs will need to right-size incentives at different scales: for regional and municipal levels, smaller or larger communities, public land and private land, and individuals and developers.

Maine's communities, whether rural or urban, need support in implementing effective land use policies and navigating conflicts that may arise. Maine is a "home-rule" state, which means that local governments have the authority and responsibility for most land use planning. Maine should provide support and technical assistance to communities to help them design and implement policies that meet intersecting land use needs.

The new Maine Office of Community Affairs will work to make state programs and land use planning support for municipalities more aligned and effective. Several existing state programs with planning components will become part of this new office, including the Municipal Planning Assistance Program, which provides technical assistance to support the development of municipal comprehensive plans and land use ordinances; the Housing Opportunity Program, which provides technical assistance and funding to encourage and support the development of additional housing units; and the Community Resilience Partnership, which provides technical assistance and funding for local climate and energy planning and action.

Local engagement and communication are essential to help communities envision future land use changes. As a "home-rule" state, Maine can help communities proactively address fears about land use policy impacts, such as by sharing information about future clean energy demand and providing clear visual images that help people discuss and understand development proposals. Communities should prioritize projects that benefit those most vulnerable to climate impacts, and the state can provide tools that encourage them to participate in local planning processes.

When planning for future development, it is increasingly essential that communities avoid growth in vulnerable areas at risk of river flooding, sea-level rise, storm surge, or other climate hazards. Maine should

Samantha Horn, Director of the Maine Office of Community Affairs

support communities to enforce state shoreland zoning requirements by providing mapping resources, technical assistance, and enforcement support. Maine and the network of regional planning agencies must support communities with the creation, adaptation, and adoption of model building codes and zoning ordinances.

Maine's land use policies must avoid disproportionate impacts on vulnerable communities. These policies should support communities and individuals who cannot afford to move out of hazardous areas, for example due to a lack of affordable housing elsewhere in their community. It is equally important for communities to avoid growth in sensitive natural areas and important plant, fish, and wildlife habitats, to ensure Maine's natural systems remain healthy and resilient.

Using the best available accurate and detailed data will help inform decision-making. Maine should prioritize making high-quality, credible, and transparent data available to guide local planning and decision-making about housing, renewable energy, and climate vulnerability and flood planning.

9

Reduce waste and emissions from products that Maine people buy and use

- **Support the development of reuse, refill, and repair systems that provide alternatives to buying new and replacement products.**
- **By 2030, set "Lead by Example" standards for state government, prioritizing waste prevention, extending product lifetimes through repair and refurbishment, replacing single-use disposables with reusable options, and diverting food scraps.**
- **Explore development of a consumption-based emissions inventory to include in the Maine Department of Environmental Protection (DEP) Biennial Report on Progress toward Greenhouse Gas Reduction Goals.**
- **Provide state-level coordination and explore funding mechanisms for additional regional capacity to help communities with waste management planning.**
- **Develop educational materials, best practice guides, and model municipal ordinances to support increased access to waste reduction and diversion programs.**

Reducing single-use plastics is an important strategy to reduce greenhouse emissions from the waste sector. Maine's product stewardship programs for consumer packaging and beverage containers have earmarked funding for reusable packaging infrastructure and programming. While packaging includes about 40 percent of all plastic products, Maine can reduce carbon emissions through reuse, repair, and lending programs for products like textiles and consumer goods (such as tool or gear libraries, repair cafes, washing and collection hubs), that provide alternatives to buying new. Maine should also investigate opportunities for industrial and regional materials exchanges and support economic growth in the reuse sector (such as training and apprenticeship, and business incubator programs for repair and refurbishment).

To lead by example, state-funded institutions should eliminate single-use products when durable, reusable options are available. Possibilities include reusable food service ware at cafeterias and events, procurement standards for reusable packaging, water refilling stations, and expansion of the state surplus program for durable, reusable goods. State government facilities should also explore options to divert food scraps, such as through composting.

Consumption-based emissions are a way of measuring greenhouse gas emissions that accounts for emissions produced in the manufacture, transport, and disposal of products that people buy and use. Consumption-based emissions inventories allow states to estimate the climate impact of products that people buy, and not just emissions that are produced within the borders of a state. Maine DEP is working with the U.S. Environmental Protection Agency (EPA) to develop a consumption-based emissions inventory for products consumed in Maine.

Increasing staff capacity will allow regional organizations to provide planning and technical support to communities, such as case studies on programs that have reduced emissions and waste. A network of partnerships across existing programs could support waste diversion along with revolving funds for community projects. Municipal comprehensive plans should be consistent with local and regional solid-waste plans that include waste prevention, diversion, and safe management of hazardous waste, food scraps, recyclables, and storm, construction, and demolition debris. Waste disposal surcharges could be applied to non-residential wastes to fund diversion programs.

Municipalities should have access to tools and resources such as the EPA's Waste Reduction Model to estimate the emissions, health, and environmental impacts of waste management practices.

Maine communities should provide access for all residents to waste prevention and diversion services such as recycling and composting. Recycling is generally more accessible in single-family homes than in multifamily properties, and many communities cannot afford to provide recycling drop-off centers.[4] In addition, rural areas face significantly higher costs. To address this, ecomaine, which provides solid-waste services to 73 Maine communities, has received a $2 million grant from the EPA Recycling Education and Outreach program to make recycling more accessible to residents of multifamily dwellings in ecomaine-member communities, which will provide valuable lessons for the rest of the state. Creating statewide translated and image-based outreach materials will reduce language and cultural communication barriers. Currently, curbside food scrap collection is a fee-based service, which not all households can afford. Providing resources for backyard composting support and offering more community food scrap drop-offs are low-barrier programs that can help communities keep food out of landfills.

END NOTES

1 Oak Ridge National Laboratory (2014). Health and Household-Related Benefits Attributable to the Weatherization Assistance Program. https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNL_TM-2014_345.pdf

2 Yechivi, Hannah. "Recent powerful storms have led to more than 140 oil spill cleanups in Maine." News Center Maine, 19 January 2024, https://www.newscentermaine.com/article/weather/severe-weather/maine-department-environmental-protection-oil-spill-cleanup-funding/97-0f4e21d0-85a5-419b-a86b-f99839e72d8d

3 Yechivi, Hannah. "Recent powerful storms have led to more than 140 oil spill cleanups in Maine." News Center Maine, 19 January 2024, https://www.newscentermaine.com/article/weather/severe-weather/maine-department-environmental-protection-oil-spill-cleanup-funding/97-0f4e21d0-85a5-419b-a86b-f99839e72d8d

4 https://ambr-recyclers.org/wp-content/uploads/2023/06/AMBR-EPR-Guidance-2023.pdf


MAINE
COMMON GROUND
COUNTRY FAIR
MAINE
WON'T
WAIT

STRATEGY G

ENGAGE WITH MAINE PEOPLE ON CLIMATE ACTION

Since the Climate Council released *Maine Won't Wait* in 2020, Maine has weathered challenges we couldn't begin to grasp four years ago. A global pandemic put less alarming public health threats on the back burner while drawing deeply on emotional reserves. Increasingly destructive storms and weather events have further tested our resolve, decimating iconic coastal infrastructure and swelling inland rivers to record levels. Maine people have deeply felt the constellation of impacts of climate change in their daily lives and communities.

Thousands of households, communities, and businesses have taken actions since 2020, increasing momentum for continued progress, but many Maine people report that they lack clear information about what they can do, struggle to navigate complex programs, or don't know where to start.

The success of *Maine Won't Wait* relies on the support of Maine people. As climate actions become more urgent, we must improve communication and engagement—especially with populations who have greater challenges accessing information and programs. With unprecedented federal funding available for climate action, the state must act to ensure communities and people aren't left out of these time-limited opportunities.

With federal funding, for example, we can accelerate weatherization, heat pump, and solar options for thousands of low-income households, especially manufactured home residents and people living in affordable housing units. These programs can reduce energy bills and improve comfort in the winter and summer. To ensure individuals and families don't miss out on these programs, special effort must be made to reach homeowners and landlords, especially in Maine's most rural, low-income, and underserved communities. Ongoing partnerships with trusted local organizations, like Community Action Programs, municipal leaders, or agencies supporting older Mainers, can ensure that more households across the state benefit from these valuable programs.

Similarly, new federal tax credits and "direct pay" funding can incentivize clean energy opportunities for businesses, nonprofits, local governments, and schools. To ensure these entities don't miss out on these cost-saving programs, targeted information and technical support is needed, especially for small businesses and nonprofits, as well as rural communities and schools.

Conversations and engagement with people across the state have shaped the Maine Climate Council's work since its beginning in 2019. During the 2023-2024 process to update this plan, the Council has made it a priority to reach more Maine people and hear from more diverse voices.

The 39-member Maine Climate Council, as designated in state law, includes scientists, industry leaders, bipartisan local and state officials, and other community representatives who bring expertise and varying perspectives to their role. The plan has benefited from the significant contributions of more than 200 working group and subcommittee members who have shaped the strategies over the course of more than 100 public meetings.

Hundreds of additional members of the public observed and participated in the Council's planning process. More than 1,000 people responded to the Council's public survey, offering feedback as the strategies took shape, and more than 350 people attended in-person meetings to share their input, emphasizing the strategies that were most important to their communities and families.

The Council stepped up its efforts to hear from communities and populations who often don't have time to participate in or struggle to access public processes, and whose voices are often left out. This can be due to geography, income, age, race, cultural or language barriers, disability, or other factors. These same populations are often most impacted by the challenges related to climate change, from storm-driven power outages to high household energy burdens. With funding from the federal Environmental Protection Agency, the Climate Council worked with the Senator George J. Mitchell Center for Sustainability Solutions at the University of Maine to directly engage with many of these populations to inform the state's climate plan.

The Mitchell Center conducted a survey and held focus groups and listening sessions with communities, groups, and individuals across the state, including low-income individuals, older adults, youth, rural residents, local government officials from small communities, New Mainers, and others. These sessions were held in partnership with a variety of community-based organizations on the ground that have existing trusted relationships with the people in the communities that they serve.

Feedback from the Mitchell Center survey results and focus groups—including broad themes and participants' own stories, ideas, and concerns—were shared with the Council and its working groups through targeted presentations and an executive summary of the report, "Engaging Low Income and Disadvantaged Populations in Maine Climate Planning."

The feedback reinforced the need for robust ongoing engagement to ensure that more Maine people, especially those in underserved communities, have access to the process and opportunities for action. A consistent thread emerged that the challenges of poverty, and its impacts on households and families, made engaging with state programs and opportunities challenging.

The Mitchell Center recommends increasing and formalizing engagement with community-based organizations and specific populations to ensure an ongoing role in program implementation and design. This will also assist the state and its partners to ensure more Mainers can engage in climate action and benefit from the solutions.

PROGRESS SINCE 2020

Raising Awareness about Climate Action

Maine.gov/climateplan is the Maine Climate Council's user-friendly website to promote the state climate action plan and its strategies. The website includes an action guide, called the Mainers' Guide to Climate Incentives, that lists state and federal incentives for homes, vehicles, and businesses and how to get started with each one. It also includes the *Maine Won't Wait* dashboard, where visitors can see the climate investments highlighted in this report in a series of interactive maps.

Increasing Climate Education Programs

In September 2023, the Maine Department of Education launched a $2 million pilot grant program for climate education after legislative advocacy by youth in Maine. The program provides grants to preK-12 schools for professional development for teachers and school-based programs.

Launching the Maine Climate Corps

In the summer of 2023, Maine launched the Maine Climate Corps Network to connect more volunteers with community projects working on transportation, energy, housing, and climate resilience.

Recognizing Leadership by Maine Businesses

The Governor's Climate Leader Award recognizes business leadership, innovation, or excellence in mitigating climate risks or developing new technologies to combat climate change.

1

Increase engagement with underserved Maine people and communities

- **Partner with community-based organizations to reach underserved individuals and communities to increase awareness about climate programs and opportunities and invite input into the design of programs and policies recommended by *Maine Won't Wait.***
- **Support programs and communications that connect people to climate-related programs and information, using existing community relationships and diverse channels of information sharing.**
- **Ensure that education and outreach about climate change and programs are accessible and available in multiple languages.**
- **Design grant application, scoring, and award processes to be accessible to small and under-resourced applicants, and consider community capacity in award decisions.**

As the Maine Climate Council, individual state agencies, and other partners carry out the policies and programs recommended by this plan, they must continue to engage with underserved individuals and communities especially vulnerable to climate impacts. The Maine Climate Council should build and sustain relationships with community-based organizations to engage in two-way conversations with people about how they experience climate impacts and how state policies and programs can better serve the needs of Mainers.

That will require sustained outreach that uses existing relationships and communication channels to make sure people are aware of and can access programs that provide tangible benefits, such as incentives, heating assistance, and transportation options. Coaching and ambassador programs would help individuals and households to understand the options and navigate the process from start to finish.

To ensure that climate and energy outreach and communications reach broad audiences, state agencies implementing climate-related policies and programs should use best practices for making information accessible to all Mainers. State agencies should strive to make written and online materials, assistance, advisory services (e.g., help lines), and meetings accessible by developing plain-language guidance and translating materials into multiple languages. Specific partnerships and efforts should be made to reach harder-to-reach populations, like older adults and geographically isolated communities.

Smaller communities and organizations often lack capacity and staff to complete long or complicated funding applications. State agencies should streamline applications by identifying and recruiting eligible communities, offering automatic enrollment or eligibility, and performing direct outreach to provide technical, planning, or grant-writing assistance, or non-competitive awards. For competitive grant awards, application evaluations should consider community size and capacity.


More Support for coastal towns
Managing the damage that is inevitable.
Protected forest land across state to sequester carbon
Existential threat to humankind
NO MORE HIGHWAY BUILDING
FREQUENT RELIABLE PUBLIC TRANSORTATION
resilience against floods
green space access for all
slow warming temperatures
empowering students to take action
protection of natural resources
sustainable use of natural resources
important in coastal resiliency
Not harming the environment or humans in the process.
Success means • Countering the narratives about • the benefits of oil • the dangers of (eg) climate
adaptation to extremes
replacing drafty windows!
More Local Farms
decreasing dependency on fossil fuel
• CREATING A MARKET FOR EFFICIENT HEAT/COOL TECH
FOR RETROFIT OF MULTI FAMILY HOMES
Eat more plants + fewer cows
• JOB TRAINING ON ENERGY EFFICIENT RETROFITS
• CITY PLANNING ADAPTING TO NEW CLIMATE REALITIES
Hold fossil fuel companies accountable financially
utilization of bridge fuels to keep energy affordable
lower energy use per person
Just transition to renewable energy for blue collar workers
More Solar Power
Considering / improving / preventing health impact (ex:

ENERGY COACHES HELP YORK HOMEOWNERS BECOME ENERGY EFFICIENT

With rising energy costs, new technology, emissions concerns, and accessible home energy rebates for Mainers, homeowners have a lot to sift through when considering a switch to electrified home heating, hot water, or air conditioning. Rozanna Patane says a sizable gap often exists between a homeowner's initial interest and taking those first steps.

"I think it's information overload. They don't know who to turn to, and they don't know who to trust," she said. "It's a very complex process, and most homeowners we know are just saying, 'How do I start?' So, we say, 'Here's how you start,' and then walk them through it. We bridge that gap. We bring that information to the homeowner so they can actually use it."

In 2022, Patane formed the York Energy Coach Program, a group of volunteers that are part of York Ready for Climate Action (YRCA), a nonprofit group founded in 2018 of passionate volunteers working to increase awareness about climate change.

The Energy Coach program connects interested homeowners with knowledgeable volunteers to understand their homes, priorities, and goals, and provide one-on-one support throughout the process of making their homes more energy efficient and heating with electricity.

"It's essentially neighbors helping neighbors," Patane said. "YRCA held breakout sessions at one meeting, just to focus on things that we felt would make a difference in our ability to meet York's climate action goals," she said.

Patane and the coaches collaborated with the York town government to seek a grant from the Community Resilience Partnership, which funded the launch of the energy coach pilot, with hopes to demonstrate how it might work and also potentially apply to other communities in Maine. The program provides training to volunteer coaches at bimonthly meetings that often include guest speakers in the clean energy field. Coaches enjoy the chance to question experts directly, often on behalf of a client with a particular home energy efficiency issue.

Patane says it's been challenging to reach low-income homeowners, but the group has partnered with other organizations that already have established relationships. For example, they plan to let the 22 manufactured homeowners in York know about Efficiency Maine's rebates that can significantly reduce the cost of a heat pump installation. The group also hopes to establish a fund to cover any cost gaps for those who need it, so more homes can contribute to York's emissions reduction goals.

One resident qualified for Home Energy Assistance Program benefits with a coach's help. That opened the door to larger financial incentives, and she was able to have an energy audit of her home, add insulation, and swap out a fossil fuel heating system for heat pumps. After navigating the rebate process and the choice of vendors with the help of an energy coach, her home is now more energy efficient and will remain so for the life of the new heating system.

"The more the information is out there, the more people are ready to actually do something."

—ROZANNA PATANE

2

Broaden climate and energy education and outreach to individuals, businesses, local governments, and nonprofit organizations

- **Raise public awareness and understanding about climate change in Maine, the state's climate actions, and climate-related programs and opportunities.**
- **Build a network of trusted partners that can help relay key messages about climate impacts and opportunities, including municipal and tribal governments, community organizations, and other engaged groups.**
- **Grow Maine's efforts to recognize climate leadership by Maine businesses and organizations and highlight examples of how they've taken action.**

The Maine Climate Council and its experts can be important voices for communicating about climate science and climate action in Maine. The Council maintains a website (Maine.gov/climateplan) and publishes print and online materials with information and actionable steps that individuals, businesses, and communities can take to reduce emissions and fight climate change. The Council needs to expand outreach efforts, with a variety of partners, to bring targeted information to more communities around the state.

Community-based organizations, municipal and tribal governments, business and nonprofit leaders, and other community groups all have important roles to play in climate action. Local governments and tribes can enroll in the Community Resilience Partnership to receive grants and planning support to take action that aligns with the plan. Community-based organizations help people to navigate energy efficiency and clean energy incentives. The Council can support these efforts by sharing regular updates with a network of "trusted partners" in formats that are ready to distribute to community members and by holding regular gatherings online and around the state for partners to share information and successful efforts to advance the goals of the climate action plan.

Maine businesses, both large and small, can make climate-smart decisions that benefit climate action goals and their bottom line. The Governor's Award for Business Excellence annually recognizes a Climate Leader for business leadership, innovation, or excellence in mitigating climate risks or developing new technologies to combat climate change. Maine should continue to recognize business leaders and increase opportunities to convene businesses of all sizes to share information and success stories.

Engaging with Older Adults on Climate Action

Older adults are key to Maine's climate action, both helping to lead our work to tackle the climate crisis while also being particularly threatened by its impacts. Earlier this year, the Governor's Cabinet on Aging launched an initiative, Community Connections, to strengthen collaboration and partnership between Maine as an Age-Friendly State and more than 100 Age-Friendly Lifelong communities around the state on shared goals of improving the well-being of older Mainers and creating sustainable communities. This program provides support for pilot communities to create Community Connector roles held by volunteers who live in the community and know it well. As trusted neighbors, Community Connectors help fellow residents find and access needed supports and resources, including programs that address the impacts of climate change on their lives. Community Connectors receive stipends and training to support them in this role. Key partners include Maine's five Area Agencies on Aging and the University of Maine's Center on Aging.

Community Connections

3

Continue to engage with Maine youth to support climate action

- **Continue to work with organizations that help Maine youth learn about climate change, the state's climate action plan, and how to get involved and spur climate action in their communities.**
- **Provide support and opportunities for Maine youth to engage with the implementation of the state's climate action plan through local climate action projects.**

Engaging with Maine youth is critical to ensuring that the state's climate action plan reflects the needs of current and future generations of Mainers. The Maine Climate Council will continue to engage with Maine youth through its Climate&Me initiative and through partnerships with youth-led and youth-serving organizations and schools.

Maine students have already demonstrated exceptional leadership in climate action projects in their schools and communities. The Council will expand opportunities for youth to lead local climate action projects in their schools and communities.

Waste separation and diversion in action inside the cafeteria at Carl J. Lamb Elementary School in Springvale.

Youth Representatives on the Maine Climate Council and Working Groups

Twelve young Maine leaders participated in the Climate Council's working groups, subcommittees, and task force, directly incorporating youth voices, knowledge, and experience in climate action planning. The youth representatives, who span ages 15–25, provided invaluable input for this *Maine Won't Wait* update. A list of youth representatives on the Maine Climate Council and Working Groups can be found at the end of this report.

Youth Voices on the Maine Climate Council: Edge Venuti

Edge Venuti, 18, is taking climate action by serving as the youth representative for the Maine Climate Council's Coastal and Marine Working Group. As a member of Maine Youth for Climate Justice and a student at the University of Maine studying Environmental Science and Ecology, Edge is speaking up to help shape the Maine Climate Action Plan update in 2024.

Edge's story is part of the Governor's Office of Policy Innovation and the Future's new Climate&Me initiative to help young Mainers find their place in climate action. By combining youth interests, hobbies, and strengths with the needs of their communities, young folks across Maine are taking action on climate.

THE SCIENCE OF HOPE

Q&A WITH SUSIE ARNOLD, MAINE CLIMATE COUNCIL MEMBER AND CO-CHAIR OF THE SCIENCE & TECHNICAL SUBCOMMITTEE

Earlier this year, Maine Climate Council member Susie Arnold,, co-chair of the Maine Climate Council's Scientific and Technical Subcommittee and Senior Ocean Scientist and Director of the Center for Climate and Community at the Island Institute, presented about the Science of Hope, and how we can apply it to climate action.

Q: Why do we need to talk about hope as it relates to climate?

A: As a co-chair of the Scientific and Technical Subcommittee, I'm often asked to give presentations on the impacts of ocean climate change, which includes a lot of negative trends. In the question-and-answer time, probably the question that I receive the most is, "In the face of this bad news, what gives you hope?"

Participating in events like the Talk of the Towns event on resilience in Stonington, organized by town leaders, gives me hope. There was an auditorium packed full of engaged people, all interested in taking action on climate to preserve the things that they value in their town.

I left this event feeling even more motivated to take action.

Q: Why are you, a marine biologist, talking about the Science of Hope?

A: Back in 2022, we were coming out of the pandemic, and I was giving a talk about ocean climate change to a group from a fisheries-dependent community. There were additional right whale rules looming over the lobster fishery, and the community was grappling with this on top of other climate-induced stressors facing their community.

At this point, I knew I had to change something about how I was communicating climate science. I'd recently participated in a staff training, where we were introduced to the Science of Hope. Since then, seeing the urgent need for hope, I've done some more digging.

Q: What did you find?

A: It turns out that hope is more than a feeling. Just as we can measure changes in climate variables, scientists also measure hope, and they've been doing so for about 30 years. Hope can be taught, it can be learned, and, importantly, it can be restored. It's about three primary components:

- Goal setting (having a goal that's personally meaningful)
- Agency thinking (having the knowledge and confidence that you can achieve that goal)
- Pathways thinking (having a plan with incremental steps and a willingness to tweak that plan as needed)

Importantly, hope is more than optimism. It's about taking action. So without the pathways-thinking, it's simply wishful thinking.

Q: How can a hope-based approach to climate communications lead to action?

A: We know that climate change can worsen the mental health and well-being of Maine people. Climate anxiety can, in some cases, prompt people to take action, but it can also lead to paralysis. Importantly, hope has been shown to increase climate action more than anxiety, thus the real need to promote feelings of constructive hope in communications to encourage climate action.

Q: How do you engender hope in young people who may be experiencing climate anxiety?

A: Particularly with youth—high school age or older, who have the intellectual capacity to understand the consequences of climate change—it's really important to coordinate openings for discussion and provide opportunities to exercise agency and avenues for meaningful action.

Q: How do you create hope—what do you do?

A: Communication models that further engagement in climate conversations involve not just the head—an understanding of climate change—but also the heart—or how the problem is meaningful to the individual—and the hands, through opportunities for hands-on participation in action. One of the single best predictors of hope is our connectedness with each other, meaning an important component of nurturing hope is through social outlets, like showing up for presentations in your community or getting involved with local groups. These types of events done well can be modeled in this way to further engagement.

They also build social capital, or strong relationships, which make communities not just more resilient, but better situated for disaster, preparedness, and response.

Additionally, these types of engagements are critical so that people see themselves in solutions, so that they are personally meaningful.

Q: Any last thoughts?

A: Hope is a framework for action. There is a great distinction between hoping, which is all about action, and wishing, which is passive — having a desire to do something but actually doing nothing.

I view my own role on the Scientific and Technical Subcommittee as an opportunity to build agency. The Working Groups help provide pathways, and the Council lays out the plan for meeting our collective goal, which is climate action. I encourage my scientist colleagues going forward to be hope-givers in their communications. Communicating the facts is absolutely important, as is communicating the pathways toward solutions.

4

Increase education related to climate change, clean energy, and related careers in PreK–12 schools and higher education

- **Continue to increase public education offerings related to climate, clean energy, and climate-related jobs.**

In 2024, the Maine Department of Education convened a Climate Education Task Force which included educators, school administrators, community partners, and youth to develop recommendations for climate education efforts in schools in Maine. The Task Force recommends:

- Increasing capacity building to advance climate literacy in Maine schools by permanently funding professional development and expanding access to free and accurate climate curriculum resources for educators.
- Continuing to support the development of a comprehensive Maine Green Schools Program by identifying school sustainability policies and recognizing "green ribbon" school sustainability leaders in Maine.

Climate education includes job and career education. Maine students should have access to information and experiences about the thousands of current and future climate and clean energy jobs that are needed in Maine, from electricians to engineers to weatherization contractors.

"Sharing the Sun" by Fiona Rigler, age 16

Earlier this year, Climate&Me, the youth-focused initiative of the Maine Climate Council, created the Youth Climate Art Challenge for Maine kids and youth ages 9-22. Participants submitted work representing their perspectives on Maine's climate challenges and solutions, and their vision of Maine's future.

The Maine Green Schools Program

The Maine Department of Education (Maine DOE) supports educators and school administrators to bring opportunities for climate literacy and action to students statewide. In 2024, the Maine DOE Climate Education Professional Grant Program funded over $1 million in partnerships to advance equitable access to climate education throughout Maine, reaching more than 50 schools and hundreds of educators with capacity and training. Since 2022, the Maine Outdoor Learning Initiative has invested $11.6 million in over 150 programs, bringing outdoor education and environmental science to over 6,500 students statewide. And the Maine DOE Clean School Bus Program has provided technical support for school bus electrification, resulting in successful federal funding in more than 30 schools since 2022.

The new Maine DOE Green Schools Program, established by statute in 2023 and launched in 2024, will build on the above successes and help Maine schools to reduce energy costs, invest in climate literacy, and support decarbonization projects that serve as teaching and learning opportunities for students. The Green Schools Program will:

- Provide technical support and advice for Maine's 600 existing school buildings to increase efficiency, install zero-emissions heating and cooling technologies, and utilize renewable energy.
- Develop guides and tools for school sustainability policies and planning, including clean transportation programs and climate resilience projects.
- Establish a Maine Green Schools Network to support and enable peer-to-peer learning across Maine schools.
- Advance long-term funding and financing options, including competitive federal funding opportunities, to ensure more Maine schools have access to these opportunities.

Youth Engagement Fellow Abigail Hayne, center, with Maine Climate Youth Representatives from left, Amara Ifeji, Edge Venuti, Bethany Humphrey, and Ainsley Morrison.

Climate&Me

Recognizing the importance of youth involvement in climate action planning, Maine stepped up youth engagement efforts as part of the 2024 update to *Maine Won't Wait*. With the support of community funders in Maine, the Governor's Office of Policy Innovation and the Future (GOPIF) hired a Youth Climate Engagement Fellow in 2023 to connect young Mainers (ages 13-29) to state climate action by creating pathways for climate work and leadership.

In 2024, GOPIF launched the Climate&Me initiative, which engages Maine youth in climate action in ways that resonate with their passions, skills, and community needs. As a part of this initiative, youth engagement fellow Abigail Hayne has engaged over 1,100 young Mainers in climate action through workshops, discussion and listening sessions, and digital engagement through the new Climate&Me webpage.

To ensure that diverse voices from Maine youth were reflected in the plan, Hayne conducted 23 workshops with 750 Maine youth at middle and high schools, colleges, libraries, and community events, where students learned about *Maine Won't Wait*, how to get involved in the planning process and provide input, and how to take steps to find climate action that is meaningful to students.

Central to this effort was building connections with community leaders and educators, particularly in Maine's rural and under-served areas.

IMPLEMENTING MAINE'S CLIMATE ACTION PLAN

Since the release of the state's four-year climate action plan *Maine Won't Wait* in 2020, Maine has become recognized as a leader in common-sense climate action. Record installations of high-efficiency heat pumps, continued progress on efficiency and weatherization, and the steady increase of electric vehicle purchases and public charging stations, among other advances, directly address our state's leading causes of greenhouse gas emissions and start us on a path to achieve the ambitious goals in the plan. Maine is on track to meet its goal of using 80 percent renewable sources for our electricity by 2030, and the Mills Administration is developing a pathway to reach 100 percent clean energy by 2040.

Much of this momentum is gathering at the local level in Maine communities. Since 2020, Maine communities have been awarded $607 million from state and federal agencies for projects to help them become more climate resilient. More than 225 communities, including cities, towns, and tribal nations, are participating in the Community Resilience Partnership, which provides technical assistance and grants to support local resilience and clean energy initiatives.

Maine's response to climate change has been thoughtful, ambitious, and effective in many ways, yet the hardest work still lies ahead given the scale of the challenge. In October 2024, the United Nation's Emissions Gap Report found that global greenhouse gas emissions set a new record in 2023, and the world must deliver dramatically stronger ambition and action or the Paris Agreement's 1.5 degree Celsius goal will be unattainable within a few years. Maine's progress is bucking that trend, showing emission reductions that are on pace to meet statutory goals and ensuring the state is doing its part to support national commitments.

In addition to fulfilling its directive under state law to produce an updated climate plan, the Council was confronted with an additional challenge this year—ensuring that the strategies also account for the pressing need to strengthen Maine's climate resilience in the wake of last winter's devastation. Relentless warming trends on land and sea are driving extreme storms, rising seas, flooding, and drought, all of which threaten our state's environment, heritage, and future. In a span of just four weeks during December 2023 and January 2024, three historically severe storms caused catastrophic inland and coastal flooding, resulting in unprecedented devastation to infrastructure and communities across the state. The damage to public infrastructure alone reached at least $90 million, with millions more in losses for private homes and businesses.

Following these storms, Governor Mills established the Infrastructure Rebuilding and Resilience Commission (IRRC) to identify near-term rebuilding and resilience priorities and deliver a long-term resilience plan for Maine in May 2025. The IRRC's preliminary recommendations, delivered in November 2024, focus on both the near-term approaches to strengthening resilience in Maine and the long-term commitments that will be required to confront a changing climate.

"We must pay, now or later, for improvements to our infrastructure, homes, and businesses. The choice Maine faces is whether to make proactive investments to safeguard our infrastructure and communities against the fury of storms and floods we know will come, or to wait for those storms to hit and pay for the fallout—preventable loss of life, avoidable community devastation, and unnecessary economic disruption. Decades of studies by the National Institute of Building Sciences have repeatedly shown that investments in proactive measures yield savings many times greater by preventing and avoiding casualties, damage, and economic disruption."

—MAINE INFRASTRUCTURE REBUILDING AND RESILIENCE COMMISSION INTERIM REPORT, NOVEMBER 2024

Unprecedented Funding

In the last several years, federal legislation has created unprecedented funding opportunities to achieve the goals in *Maine Won't Wait*.

Nearly $1 billion in federal American Rescue Plan funds, invested through Governor Mills' Maine Jobs and Recovery Plan, are improving the lives of Maine people and families, helping businesses, creating good-paying jobs, and building an economy poised for future prosperity. The Jobs Plan includes significant investments in broadband, transportation, resilience, energy efficiency, and Maine's heritage industries, consistent with recommendations of *Maine Won't Wait*.

On November 15, 2021, President Biden signed into law the historic Infrastructure Investment and Jobs Act (IIJA), which has subsequently been referred to as the Bipartisan Infrastructure Law (BIL). The White House described the legislation as "a once-in-a-generation investment in our nation's infrastructure and competitiveness…this Bipartisan Infrastructure Law will rebuild America's roads, bridges, and rails, expand access to clean drinking water, ensure every American has access to high-speed internet, tackle the climate crisis, advance environmental justice, and invest in communities that have too often been left behind."

Maine is pursuing significant funding opportunities that align with state goals, including those set forth in *Maine Won't Wait*. Since the law passed, over $3.7 billion from BIL has been awarded to hundreds of projects in Maine including transportation, broadband, resilience, and energy investments.

The federal Inflation Reduction Act (IRA) passed in 2022 included $370 billion for climate and energy spending with the aim of reducing U.S. greenhouse gas emissions by 40 percent by 2030. The IRA has been touted as the most significant federal climate law, and it will deliver transformational climate and clean energy programs and opportunities for Maine businesses, consumers, and communities, through significant support for tax incentives, funding, innovation opportunities, financing, jobs, and more. Additionally, there are significant job growth opportunities in Maine based on IRA investments.

Maine was awarded historic funding for climate resilience by the National Oceanographic and Atmospheric Administration (NOAA) in the summer of 2024, with a five-year $69 million climate resilience grant through its highly competitive Climate Resilience Regional Challenge. The goal of this initiative is to protect Maine's communities, environment, and working waterfronts from extreme storms, flooding, and rising sea levels. The state will use the funding to accelerate and expand climate action by working with communities to take strong, pragmatic steps to address vulnerabilities, protect people, and ensure critical infrastructure is prepared for future impacts. Focus areas of the grant include:

- Expanding support to communities through the Community Resilience Partnership, which now works with over 225 towns, cities, and tribal governments to support planning and projects to address climate effects, based on priorities identified by local leaders and residents. This program has already awarded nearly $11 million in grants to fund community resilience and clean energy initiatives.
- Supporting investments in critical infrastructure projects through the Maine Infrastructure Adaptation Fund, the state's primary program funding and implementing significant construction projects to address serious climate vulnerabilities. The Fund has awarded more than $76 million in grants to Maine communities.
- Expanding ongoing efforts to preserve and protect vital working waterfronts and businesses, which experienced severe damage in the January storms, and support efforts to protect vulnerable coastal and inland ecosystems through natural climate solutions, flood modeling, and community support.
- Establishing a resilience office within state government, dedicated to leading cross-agency efforts to enhance climate resilience across the state, especially in communities with significant climate vulnerabilities impacting residents, infrastructure, and the environment.

The NOAA-funded state resilience office will be created in the Maine Office of Community Affairs, a new standalone state office that was recently established to partner with Maine communities to strengthen planning and implementation at the local level.

Moving with urgency to take bold, specific actions to achieve Maine's climate goals will require extensive resources, and no single funding stream will suffice. With federal funding likely to decrease from the significant investments of the last several years, at least in the short term, Maine needs to leverage a variety of sources—existing and new, private and public, local, state, and federal—and innovative financing mechanisms to support transformation.

Maine needs to leverage new financing tools for both clean energy and energy efficiency as well as climate adaptation and infrastructure resilience projects. The Maine Climate Council recommends that the state develop a long-term funding plan and investment strategy to support implementation of *Maine Won't Wait* goals, including the financial tools needed to make sure all Maine people have access to clean energy and energy efficiency improvements. The state must ensure shared benefits across diverse populations of Maine people, including increasing access to low-cost capital for low- and moderate- income customers.

There are opportunities to utilize existing and innovative finance options to make climate action available to Maine residents, communities, and schools. The state should explore how to structure programs and products to attract private investment. The plan should build on and leverage the Clean Energy and Sustainability Accelerator ("Green Bank"), a recommendation of *Maine Won't Wait* that was established at Efficiency Maine to promote financing and investment in renewable energy systems, energy efficiency upgrades, fuel switching and electrification, industrial decarbonization, battery storage, microgrids, and clean-transportation vehicles and infrastructure.

The state should consider the opportunity for other finance structures to provide long-term capital support for both climate resilience and energy programs, and it should leverage the significant federal funding that is currently available, such as the federal Greenhouse Gas Reduction Fund (GGRF), a $27 billion national investment created by the Inflation Reduction Act to expand financing for energy efficiency and carbon-reduction projects. Several Maine entities expect to boost their loan offerings using GGRF funds, including Efficiency Maine, MaineHousing, the Genesis Community Loan Fund, and Coastal Enterprises, Inc.

Partnerships with philanthropy, nonprofits, and community-based organizations can also be essential to pilot programs and fill capacity gaps, especially on the local level. Philanthropy has and can play a catalytic role in climate action, in complement to federal and state funds. Maine should continue to strengthen partnerships with philanthropy and other private sector partners to achieve climate goals.

Tracking Progress

Tracking the progress of climate action in Maine informs the public and helps evaluate whether evidence-based adjustments, enhancements, or replacements to policies are needed in pursuit of the plan's climate objectives.

Each year, the Maine Climate Council releases an annual progress report, highlighting the actions taken through each strategy toward Maine's climate and energy goals.

The Maine Climate Council has an interactive dashboard highlighting the progress being made to implement *Maine Won't Wait*'s climate and energy recommendations. The dashboard can be found at Maine.gov/climateplan.

The following targets are established by the Maine Climate Council to track the progress of the 2024 climate action plan update:

2024 Maine Won't Wait Update Emissions Targets

	2030 Targets	2050 Targets
Number of Light-Duty EVs on the Road	150,000	1,420,000
Reduction in Light-Duty VMT per Vehicle	20%	20%
Number of Medium- and Heavy-Duty EVs on the Road	3,000	81,000
Reduction in Heavy-Duty VMT per Vehicle	4%	4%
Number of Households with Retrofit Heat Pumps (installed after 2018) and Legacy Fossil Systems	130,000	46,000
Number of Households with Whole-Home Heat Pump Systems	116,000	481,000
Weatherized Households (after 2019)	35,000	105,000

Additional Targets

Additional targets will indicate whether Maine is on track to meeting its emission goals and whether climate, energy, and resilience policies and programs are being implemented equitably.

	Target
Heat pumps in low-income households	40,000 by 2030
Low-income homes weatherized	10,000 by 2030
New or renovated energy-efficient affordable housing units	1,500 per year
Percent of light-duty EV rebate funding to low- and moderate-income (LMI) households	50%
Percent of climate infrastructure and resilience investments in underserved communities	40%
Low- and moderate-income households with rooftop solar and/or enrolled in community solar projects	15,000 by 2030
Publicly funded EV charging ports	700 publicly funded EV charging ports by 2028
Clean-energy jobs created	30,000 by 2030
New registered apprentices	7,000 by 2030
Renewable electricity usage in Maine	80% by 2030

Below is the full list of indicators that will be tracked in annual *Maine Won't Wait* progress reports and in the online dashboard, including the targets listed above.

- Progress towards statutory greenhouse gas emissions reduction targets
- Progress towards statutory carbon neutrality target
- Percent of climate infrastructure and resilience investments in underserved communities
- Electric vehicles (EVs) on the road
- Total number of EV rebates
- Percent of light-duty EV rebate funding to low- and moderate-income (LMI) households
- EV charging stations funded by Recharge Maine
- Number of medium- and heavy-duty EVs on the road
- Vehicle miles traveled (VMT) by year
- Number and location of clean and active transportation projects
- % of clean and active transportation project spending in underserved communities
- Heat pumps installed in Maine homes and businesses
    - Heat pumps installed in low-income homes
- Homes weatherized
    - Low-income homes weatherized
- Affordable housing units built or renovated with clean or energy-efficient technologies (2025-2030)
- Greenhouse gas emissions from state buildings
- Renewable electricity usage in Maine
- Energy burden among low-income households
- Number of LMI households with rooftop solar or enrolled in community solar programs
- Clean energy jobs created
    - Clean energy workforce demographics
    - Average wages for clean-energy jobs
    - Number of Registered Apprentices in Maine
- Percentage of Maine lands conserved
    - Percentage of Maine lands conserved by county
- Communities in Resilience Partnership
    - Underserved communities enrolled in Community Resilience Partnership
- Climate infrastructure and resilience investments
- Outreach activities and events reaching underserved communities

Other Reports

The 2024 *Maine Won't Wait* update references several additional state plans, including:

Maine Energy Plan: Pathway to 2040 — Governor's Energy Office

The Governor's Energy Office (GEO) is conducting planning to achieve 100 percent clean energy in Maine by 2040. The "Maine Energy Plan: Pathway to 2040" is engaging the public and key energy stakeholders on actionable and affordable strategies to meet this target, such as diversifying energy sources in Maine, stabilizing electricity rates, reducing emissions, and supporting jobs and economic investment.

This process stems from direction by Governor Mills, who called for accelerating Maine's trajectory in her State of the Budget address in 2023, in response to the burden placed on Maine people and businesses from high fossil fuel prices caused by the Russian invasion of Ukraine.

The "Maine Energy Plan: Pathway to 2040" process intends to align with goals of *Maine Won't Wait* and build upon recent state energy analyses centering on distributed generation, energy storage, offshore wind, renewable energy markets, and strengthening Maine's clean energy economy. GEO has retained The Brattle Group and Evolved Energy Research to conduct modeling and technical analyses to inform this planning process.

Maine's Economic Development Strategy — Department of Economic and Community Development

In 2019, the State embarked on its first strategic economic plan in two decades. This effort, which included over 1,500 voices in public meetings, online comments, and a diverse set of working group members, culminated in November 2019, when Governor Mills released the state's new 10-year strategic economic development plan.

By 2023, it was time for a refresh of the strategy given the major changes to the Maine economy and progress towards the goals since the original report was published. Again building an extensive planning process, involving more than 600 participants in stakeholder sessions and a dedicated steering committee, the state published a comprehensive update in 2024: The 2024 Reset.

The nonpartisan plan aims to foster collaboration among the public, private, nonprofit, and education sectors to grow and diversify Maine's economy. The Department of Economic and Community Development is leading the initiative, in collaboration and partnership with other government agencies, business leaders, and private organizations.

Infrastructure Rebuilding and Resilience Commission — Office of Policy Innovation and the Future

Governor Mills created the Infrastructure Rebuilding and Resilience Commission by executive order on May 21, 2024. It is charged with reviewing and evaluating Maine's response to the recent storms, identifying crucial areas for near-term investment and policy needs, and developing the state's first long-term infrastructure plan to ensure that Maine is ready for the harsh storms ahead.

The Commission has engaged with communities, industries, and organizations to understand challenges following storms, identify and bridge gaps in resources like funding, financing, and insurance, how to improve the resilience of energy systems, and propose new approaches to improve disaster recovery and response and strengthen resilience supports at the state, regional, and local levels.

Per the Governor's executive order, the Commission delivered its first report on near-term rebuilding and resilience priorities in November 2024. A long-term resilience plan for Maine will follow in May 2025.

Maine Climate Council Scientific and Technical Subcommittee Scientific Assessment of Climate Change and Its Effects in Maine (2024 Update)

The Scientific and Technical Subcommittee (STS) of the Maine Climate Council was established by statute in 2019 to "identify, monitor, study, and report out relevant data related to climate change in the State and its effects on the state's climate, species, marine, and coastal environments and natural landscape and on the oceans and other bodies of water." The STS is composed of scientists with a broad array of expertise on climate change globally and in Maine who are committed to supporting the work of the Council with the best available science to inform decision-making. In 2020, the STS released its initial comprehensive report, Scientific Assessment of Climate Change and Its Effects in Maine, and in 2024 the STS released an update to the Scientific Assessment that informed this 2024 update to *Maine Won't Wait*.

Maine Climate Council Working Group Reports

The Maine Climate Council includes six working groups responsible for developing recommendations for the Council to consider in key areas. The June 2024 reports from the working groups as well as two task forces are available on the Maine Climate Council's website.

Maine Climate Council Emissions Modeling

The Governor's Office of Policy Innovation and the Future contracted with Evolved Energy Research to analyze future pathways to meet Maine's gross greenhouse gas emissions targets. Results from this analysis were shared with the Council and are available on the Maine Climate Council's website.

University of Maine Mitchell Center Engaging Low-Income and Underserved Populations In Maine Climate Planning

The Governor's Office of Policy Innovation and the Future contracted with the University of Maine's Senator George J. Mitchell Center for Sustainability Solutions to hear from low-income and other underserved populations during the 2024 update to *Maine Won't Wait*. Detailed findings from the Mitchell Center's work to engage these populations can be found on the Maine Climate Council's website.

Clean Transportation Roadmap for Medium- and Heavy-Duty Vehicles

The 2024 Clean Transportation Roadmap for Medium- and Heavy-Duty Vehicles outlines strategies to decarbonize the trucks and buses moving people and goods within and through the state. The Roadmap supports *Maine Won't Wait* Strategy A: Embrace the Future of Transportation in Maine and also complements the *Maine Clean Transportation Roadmap (2021)* that focuses on decarbonizing light-duty vehicles.

ACKNOWLEDGEMENTS

The Maine Climate Council expresses its deepest thanks and appreciation to all the people and organizations who contributed to this Plan.

THE MEMBERS OF THE MAINE CLIMATE COUNCIL ARE:

Co-Chairs:

Hannah Pingree, Director of the Governor's Office of Policy Innovation and the Future

Melanie Loyzim, Commissioner of the Department of Environmental Protection

Members of the State Legislature:

Representative Nathan Carlow (R)

Representative Christopher Kessler (D)

Senator Stacy Brenner (D)

Senator Matt Harrington (R)

Members of the Executive Branch, or their designees:

Amanda Beal, Commissioner of the Department of Agriculture, Conservation and Forestry

Dan Burgess, Director of the Governor's Energy Office

Judy Camuso, Commissioner of the Department of Inland Fisheries and Wildlife

Brigadier General Diane Dunn, Commissioner of the Department of Defense, Veterans and Emergency Management

Kirsten Figueroa, Commissioner of the Department Administrative and Financial Services

Designee: Elaine Clarke, Deputy Commissioner of Operations

Laura Fortman, Commissioner of the Department of Labor

Designee: Samantha Dina, Associate Commissioner

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

Patrick Keliher, Commissioner of the Department of Marine Resources

Pender Makin, Commissioner of the Department of Education

Designee: Page Nichols, Chief Innovation Officer

Bruce Van Note, Commissioner of the Department of Transportation

Sara Gagné-Holmes, Commissioner of Department of Health and Human Services

Designee: Dr. Puthiery Va, Director of the Center for Disease Control and Prevention

Members of Quasi-Government Agencies:

Dan Brennan, Executive Director of the Maine State Housing Authority

Michael Stoddard, Executive Director of Efficiency Maine Trust

Members Representing Environmental Nonprofit Organizations or Foundations:

Kate Dempsey, Maine State Director for The Nature Conservancy

Deborah Ellwood, President and CEO, Maine Community Foundation

Members with Expertise in Climate Change Science:

Susie Arnold, Senior Ocean Scientist, Director of the Center for Climate and Community at the Island Institute

Ivan Fernandez, Distinguished Professor at the University of Maine's Climate Change Institute & School of Forest Resources

Members with Expertise in Resilience, Climate-Change Adaptation, Emergency Management, or Disaster-Risk Reduction:

Jay Kamm, Senior Planner, Northern Maine Development Commission

Amy Landry, Executive Director of the Androscoggin Valley Council of Governments

Other Members:

Noël Bonam, Maine State Director for AARP Maine

Jessie Perkins, Resident of Bethel, Maine

Expert on the State's Energy Sector: Ken Colburn

Representative of Manufacturing Industry: Jim Brooks, Environmental Manager for Sappi North America

Representative of Maine Tribes: Maulian Bryant, (former) Ambassador, Penobscot Nation

Representative of Municipal Government: Gary Lamb, City Manager for the City of Hallowell

Representative of Small Business: Daniel Kleban, Owner of Maine Beer Company

Representative of Agriculture: Melissa Law, Owner of Bumbleroot Organic Farm in Windham

Representative of Building and Construction Trades: Matt Marks, Cornerstone Government Affairs

Representative of Marine Fisheries: Bob Baines, Board Member, Maine Lobstermen's Association

Representative of Business: Todd Bullen, Vice President of Retail Operations, Hannaford Supermarkets

Representative of Labor: Francis Eanes, Executive Director of the Maine Labor Climate Council

Representative of Forest Industry: Patrick Strauch, Executive Director of the Maine Forest Products Council

Representative of Maine Youth: Amara Ifeji, Maine Environmental Education Association

THE MEMBERS OF THE SCIENTIFIC AND TECHNICAL SUBCOMMITTEE:

Co-Chairs:

Susie Arnold, Island Institute

Ivan Fernandez, University of Maine

Stephen Dickson, Maine Geological Survey

Members:

Senator Nicole Grohoski, Maine State Legislature

Senator Matt Harrington, Maine State Legislature

Representative Mark Michael Babin, Maine State Legislature

Representative Vicki Doudera, Maine State Legislature

Sean Birkel, University of Maine

Pamela Lombard, US Geological Survey

Glenn Hodgkins, US Geological Survey

Linda Bacon, Maine Department of Environmental Protection

Alix Contosta, University of New Hampshire

Bradfield Lyon, University of Maine

Andrew Johnson, Maine Department of Environmental Protection

Carl Wilson, Maine Department of Marine Resources

Peter Slovinsky, Maine Geological Survey

Joe Kelley, University of Maine

Rick Wahle, University of Maine

Nichole Price, Bigelow Laboratory for Ocean Sciences

Damian Brady, University of Maine

Nicholas Record, Bigelow Laboratory

Hannah Baranes, Gulf of Maine Research Institute

Kathy Mills, Gulf of Maine Research Institute

Andrew Goode, University of Maine

Kanae Tokunaga, Gulf of Maine Research Institute

Aaron Weiskittel, University of Maine

Adam Daigneault, University of Maine

Muhammad Drammeh, University of Maine **

Alyssa Soucy, University of Maine **

Philip deMaynadier, Maine Inland Fisheries and Wildlife

Amanda Cross, US Fish and Wildlife Service

Sally Stockwell, Maine Audubon

Kristen Puryear, Maine Natural Areas Program

Todd Ontl, US Forest Service

Andrew Barton, University of Maine at Farmington

Daniel Hayes, University of Maine

Glen Koehler, Cooperative Extension, University of Maine

Rachel Schattman, University of Maine

Jason Lilley, Cooperative Extension, University of Maine

Lily Calderwood, Cooperative Extension, University of Maine

Caleb Goossen, Maine Organic Farmers and Growers Association

Mark King, Cooperative Extension, University of Maine

Rebecca Lincoln, Maine Center for Disease Control

Susan Elias, Maine Medical Center Research Institute

Gail Carlson, Colby College

Jonathan Rubin, University of Maine

Alison Gardner, University of Maine

Darren Ranco, Wabanaki Center, University of Maine

Cindy Isenhour, University of Maine

Eileen Johnson, Bowdoin College

Andy Whitman, Maine Department of Agriculture, Conservation and Forestry

WORKING GROUPS

The six working groups of the Climate Council — (1) Transportation; (2) Buildings, Infrastructure, and Housing; (3) Energy; (4) Community Resilience; (5) Coastal and Marine; and (6) Natural and Working Lands; as well as the Materials Management Task Force — developed the draft strategies for the Climate Council to consider. The details of the working group strategies are a resource for policymakers as Maine begins to implement the strategies in the Climate Action Plan. The working group reports are available at maine.gov/climateplan/.

* Also a member of the Equity Subcommittee

** Youth representative

TRANSPORTATION WORKING GROUP

Co-Chairs:

Joyce Taylor, Maine Department of Transportation

Jeff Crawford, Maine Department of Environmental Protection

Members:

Senator Ben Chipman, Maine State Legislature

Senator Bradlee Farrin, Maine State Legislature

Representative Wayne Parry, Maine State Legislature

Representative Daniel Ankeles, Maine State Legislature

Kendra Amaral, Town of Kittery

Dan Burgess, Governor's Energy Office

David Morris, Maine Department of Administrative and Financial Services

Karina Graeter, Southern Maine Planning and Development Commission

Michael Stoddard, Efficiency Maine Trust

Dana Doran, Professional Logging Contractors of Maine

Eric Feigenbaum, Versant Power

Elizabeth Frazier, Pierce Atwood / Alliance for Automotive Innovation

Katherine Freund, ITNAmerica

Ben Lake, VEIC

Maria Fuentes, Maine Better Transportation Association

Judy Gates, HNTB

Emily Green, Conservation Law Foundation

Chad Heid, BSOOB Transit

Jay Kamm, Northern Maine Development Commission

Bill Kitchen, Town of Machias

Matt Marks, Cornerstone Government Affairs

Jess Maurer, Maine Council on Aging

Peter Merfeld, Maine Turnpike Authority

Sara Mills-Knapp, Greater Portland Council of Governments

Brian Parke, Maine Motor Transport Association

Patricia Quinn, Northern New England Passenger Rail Authority

Aaron Smith, Avangrid

Jonathan Rubin, University of Maine

Tim Seymour, Darling's Auto Group

Tom Brown, Maine Automobile Dealers Association

Jean Sideris, Bicycle Coalition of Maine

Josh Caldwell, Natural Resources Council of Maine

Kaitlyn Nuzzo, The Nature Conservancy

Barry Woods, ReVision Energy

Sandy Buchanan, Western Maine Transportation Services, Inc. *

Marcel Ntagora, Greater Portland Council of Governments *

Patrick Strauch, Maine Forest Products Council

Francis Eanes, Maine Labor Climate Council, AFL

Taylor Colbeth, University of Southern Maine **

BUILDINGS, INFRASTRUCTURE, AND HOUSING WORKING GROUP

Co-Chairs:

Kathleen Meil, Maine Conservation Voters

Michael Stoddard, Efficiency Maine Trust

Members:

Senator Matt Pouliot, Maine State Legislature

Senator Mike Tipping, Maine State Legislature

Representative Richard Bradstreet, Maine State Legislature

Representative Grayson Lookner, Maine State Legislature

Representative Christopher Kessler, Maine State Legislature

Naomi Beal, passivhausMAINE

Ellen Belknap, SMRT Architects & Engineers

Laney Brown, Avangrid

Scott Brown, Maine Department of Education

Dan Burgess, Governor's Energy Office

Elaine Clark, Maine Department of Administrative and Financial Services

Tom Twist, Bates College

Dan Dixon, University of Maine

Steve Hudson, Preti Flaherty

Daniel Kleban, Maine Beer Company

Jeff Marks, ClimateWork Maine

Don McGilvery, MaineHousing

Rozanna Patane, Town of York

Greg Payne, Governor's Office of Policy Innovation and the Future

Todd Rothstein, Avesta Housing

Matthew Pitzer, Maine Real Estate and Development Association

Jason Shedlock, Maine State Building & Construction Trades Council / Laborers' International Union

Jesse Thompson, Kaplan Thompson Architects

Pat Stanton, E4TheFuture

Sharon Klein, University of Maine

Dale Basher, Downeast Community Partners *

Andrew Barrowman, Bangor Natural Gas Company

Deborah Paredes, Maine Environmental Education Association / The Nature Conservancy **

Patrick Strauch, Maine Forest Products Council

Francis Eanes, Maine Labor Climate Council, AFL

Ania Wright, Maine Audubon

Gary Fearon, Penobscot Nation Housing Department

Matt Marks, Cornerstone Government Affairs

Safiya Khalid, Community Organizing Alliance *

Eben Perkins, Competitive Energy Solutions

ENERGY WORKING GROUP

Co-Chairs:

Dan Burgess, Governor's Energy Office

Ken Colburn, Energy and Climate Expert

Members:

Senator Matt Harrington, Maine State Legislature

Senator Mark Lawrence, Maine State Legislature

Representative Reagan Paul, Maine State Legislature

Representative Gerry Runte, Maine State Legislature

Gina Mace, Summit Utilities

Jack Shapiro, Natural Resources Council of Maine

Scott Cuddy, Maine Labor Climate Council

Tony Buxton, Preti Flaherty / Industrial Energy Consumer Group

Steve Clemmer, Union of Concerned Scientists

Greg Cunningham, Conservation Law Foundation

Chad Allen, Longroad Energy

Johannah Blackman, A Climate to Thrive

Bill Harwood, Office of the Public Advocate

Suzanne MacDonald, National Renewable Energy Laboratory

Audrey Hufnagel, Maine Youth for Climate Justice **

Ashley Luszczki, Maine State Chamber of Commerce

Eliza Donoghue, Maine Renewable Energy Association

Aaron Smith, Avangrid

Michael Burgess, Penobscot Indian Nation

Ben Cracolici, Maine Public Utilities Commission

Julie Rosenbach, City of South Portland

Fortunat Mueller, Revision Energy

Michael Stoddard, Efficiency Maine Trust

Alison Bates, Colby College

Sarah Tracy, Pierce Atwood

Jake Ward, University of Maine

Tom Welch, Consultant, retired Maine Public Utilities Commission chair

Jason Parent, Aroostook County Action Program *

Patrick Strauch, Maine Forest Products Council

Moise Mulamba, Ready Seafood *

Martin Carriere, Bates College **

Gary Lamb, City of Hallowell

COMMUNITY RESILIENCE WORKING GROUP

Co-Chairs:

Judy East, Bureau of Resource Information and Land Use Planning, MDACF

Rebecca Boulos, Maine Public Health Association *

Anne Fuchs, Maine Emergency Management Agency

Samuel Roy, (former) Maine Emergency Management Agency

Members:

Senator Craig Hickman, Maine State Legislature

Senator Marianne Moore, Maine State Legislature

Representative Amanda Collamore, Maine State Legislature

Representative Margaret Craven, Maine State Legislature

Noël Bonam, AARP Maine

Howard Carter, City of Saco

Jessica Brunacini, Wells National Estuarine Research Reserve

Tora Johnson, University of Maine / Sunrise County Economic Council

Eileen Johnson, Bowdoin College *

Jim Nadeau, Nadeau Land Surveys

Jessie Perkins, Bethel Area Chamber of Commerce

Abbie Sherwin, Southern Maine Planning and Development Commission

Pete Slovinsky, Maine Geological Survey
Parker Gassett, University of Maine
Stephanie Welch, Island Institute
Chloe Sheilds, New England Environmental Finance Center
Andrew Barton, University of Maine at Farmington
Michael Durkin, Cumberland County Emergency Management Agency
Alsina Brenenstuhl, Piscataquis County Emergency Management Agency
Heather Dumais, Maine Emergency Management Agency
Taylor LaBrecque, Maine Department of Transportation
Charlie Hebson, Maine Department of Transportation
Jeremy Bell, The Nature Conservancy
Nan Johnson, Federal Emergency Management Agency
Emily Rabbe, Lincoln County Regional Planning Commission
Charlie Soltan, Soltan Bass, LLC
Marla Stelk, National Association of Wetland Managers
Leticia VanVuuren, Knox County Emergency Management Agency
Lance Boucher, American Lung Association
Dr. Puthiery Va, Maine Center for Disease Control
Corrie Hunkler, Healthy Acadia
Nancy Hasenfus, Retired physician
Tim Doak, Northern Light Health
Kohl Kanwit, Department of Marine Resources
Samantha Grela, City of Portland - Cities Readiness Initiative
Keyana Pardilla, Wabanaki Public Health and Wellness
Kate Warner, Maine Rural Water Association
Dennis Kiley, EcoPsychology Initiative
Kathleen Leyden, Maine Coastal Program, Maine Department of Marine Resources
Andy Dorr, Town of Damariscotta
Ainsley Morrison, Bowdoin College **
Kirsten Brewer, Volunteer Maine

COASTAL AND MARINE WORKING GROUP

Co-Chairs:

Curt Brown, Ready Seafood
Carl Wilson, Maine Department of Marine Resources

Members:

Senator Marianne Moore, Maine State Legislature

Senator Cameron Reny, Maine State Legislature

Representative Tiffany Strout, Maine State Legislature

Representative Lydia Crafts, Maine State Legislature

Nick Battista, Island Institute

Jocelyn Runnebaum, The Nature Conservancy

Curtis Bohlen, Casco Bay Estuary Partnership

Ben Gutzler, Wells National Estuarine Research Reserve

Ivy Frignoca, Friends of Casco Bay

Jeremy Gabrielson, Maine Coast Heritage Trust

Beverly Johnson, Bates College

Kathy Mills, Gulf of Maine Research Institute

Bill Needelman, City of Portland

Gayle Zydlewski, Maine Sea Grant at the University of Maine

Susie Arnold, Island Institute

Wendy Garland, Maine Department of Environmental Protection

Dawn Hallowell, Maine Department of Environmental Protection

Rebecca Peters, Maine Department of Marine Resources

Jesica Waller, Maine Department of Marine Resources

Meredith White, Maine Department of Marine Resources

Lisa White, Maine Department of Marine Resources

Carla Guenther, Maine Center for Coastal Fisheries

Amy Winston, CEI

Robert Holmberg, Roger Williams University

Ben Martens, Maine Coast Fishermen's Association

Chuck Bennett, Independent lobsterman

Michelle Staudinger, University of Maine

Heather Hamlin, University of Maine

Josh Stoll, University of Maine

Damian Brady, University of Maine

Christine Beitl, University of Maine

Natalie Johnson, Maine Maritime Academy **

Edge Venuti, Sunrise County Climate Coalition / Maine Youth for Climate Justice **

Bob Baines, Maine Lobstermen's Association

Anne Langston Noll, Maine Aquaculture Innovation Center

Kathleen Billings, Town of Stonington

Gabe McPhail, Resilient Communities, L3C *

Jessica Joyce, Tidal Bay Consulting / DMR Shellfish Advisory Council

Marissa McMahan, Manomet *

Amy deVries, Cape Elizabeth High School

Thew Suskiewicz, Atlantic Sea Farms

NATURAL AND WORKING LANDS WORKING GROUP

Co-Chairs:

Commissioner Amanda Beal, Maine Department of Agriculture, Conservation and Forestry

Tom Abello, Deputy Chief of Staff, Governor's Office

Members:

Senator Rick Bennett, Maine State Legislature

Senator Henry Ingwersen, Maine State Legislature

Representative Dean Cray, Maine State Legislature

Representative Margaret O'Neil, Maine State Legislature

Ivan Fernandez, University of Maine

Patrick Strauch, Maine Forest Products Council

Melissa Law, Bumbleroot Organic Farm

Hannah Carter, University of Maine

Molly Docherty, Maine Department of Agriculture, Conservation and Forestry

Phillip DeMaynadier, Maine Department of Inland Fisheries and Wildlife

Charles Penney, USDA Natural Resources Conservation Service

Carol Weymouth, Maine Association Conservation Districts

Ellen Griswold, Wolfe's Neck Center for Agriculture & the Environment

Karin Tilberg, Forest Society of Maine

Maureen Drouin, Maine Conservation Voters

Francesca Gundrum, Maine Audubon

Heather Spalding, Maine Organic Farmers and Gardeners Association

Kaethe Rice, Maine Youth for Climate Justice **

Darren Ranco, University of Maine *

Norm Daigle, Hannaford Supermarkets

John Naylor, Rosemont Market

Jeff Romano, Maine Coast Heritage Trust

David Trahan, Sportsman's Alliance of Maine

Johnny Sanchez, Food AND Medicine

Gary Lamb, City of Hallowell

Silvan Shawe, Cultivating Community

Dana Doran, Professional Logging Contractors of Maine

Bethany Atkins, Maine Department of Inland Fisheries and Wildlife

Craig Lapine, Maine Department of Agriculture, Conservation and Forestry

Andy Cutko, Maine Department of Agriculture, Conservation and Forestry

Bethany Humphrey, The Climate Initiative * **

Adam Bishop, Maine Farmland Trust

MATERIALS MANAGEMENT TASK FORCE

Co-Chairs:

Commissioner Melanie Loyzim, Maine Department of Environmental Protection

Dr. Cindy Isenhour, University of Maine

Members:

Mark Draper, Aroostook Waste Solutions
Hillary Lister, Athens Town Council & Don't Waste ME
Abbie Webb, Casella Waste Systems
Kate Tomkins, Chickadee Compost
Sarah Nichols, Clynk
Kevin Roche, ecomaine
Brett Rogers, Environmental Projects, Inc.
Greg Williams, Exeter Agri-Cycle Energy
Heather Steeves, Goodwill Northern New England
George Parmenter, Hannaford Supermarkets
Dan Wojciechowski, IDEXX Laboratories
Alex Zipparo, Island Institute
Lane Gould, Maine Bureau of General Services
Carla Hopkins, Maine Department of Environmental Protection
Josh Bossin, Maine GearShare
Victor Horton, Maine Resource Recovery Association
Maya Faulstich, Maine Youth for Climate Justice **
Mike Carroll, Municipal Review Committee
Vanessa Berry, Natural Resources Council of Maine
Scott Reed, Nine Dragons Paper Holdings Limited (ND Paper)
Melissa Lavoie, Northeast Waste Management Officials' Association
Juliana Beecher, Oak Ridge Institute for Science and Education Fellow
Ben Chesler, Roux Institute
Wes Ingwerson, U.S. EPA Office of Research and Development

Susanne Lee, UMaine/Sen. George J. Mitchell Center for Sustainability Solutions
Reed Miller, UMaine/Sen. George J. Mitchell Center for Sustainability Solutions
Travis Blackmer, UMaine/Sen. George J. Mitchell Center for Sustainability Solutions
Sydney Harris, Upstream
Jeff McGown, Waste Management
Alison McKellar, Town of Camden Selectboard
Josh Paul, Penobscot Nation
Travis Peaslee, Lewiston Auburn Water Pollution Control Authority
Teddy Lyman, Maine Department of Education

Gathering for Ecological Restoration" by Jordan Ramos, age 22

Earlier this year, Climate&Me, the youth-focused initiative of the Maine Climate Council, created the Youth Climate Art Challenge for Maine kids and youth ages 9-22. Participants submitted work representing their perspectives on Maine's climate challenges and solutions, and their vision of Maine's future.

Staff and Consultant Support for *Maine Won't Wait*

Consultants

Thank you to David Plumb, Melanie Gárate, Laura Singer, and Aarati Halbe from Consensus Building Institute for process guidance and meeting facilitation for the Maine Climate Council and working groups. Thank you to Jeremy Hargreaves and Jonathan Kadish from Evolved Energy Research who produced an emissions analysis of the draft greenhouse gas reductions strategies. And thank you to Jessica Reilly-Moman for consultant support on the Scientific Assessment Update.

Thank you to Cindy Butler for designing the report and to Kristina DeFrancesco for proofreading.

Staff

Thank you to the staff of the Governor's Office of Policy Innovation and the Future (GOPIF), the Governor's Energy Office (GEO), Efficiency Maine, the Maine Department of Agriculture, Conservation and Forestry (DACF), Maine Department of Marine Resources (DMR), Maine Department of Transportation (MaineDOT), Maine Emergency Management Agency (MEMA), the Maine Commission for Community Service (Volunteer Maine), Maine Department of Inland Fisheries and Wildlife (DIFW), Maine Department of Economic and Community Development (DECD), and the Maine Department of Environmental Protection (DEP), for their work on the plan and technical support. Although many staff contributed to this report, special thanks go to the following:

Brian Ambrette, Senior Climate Resilience Coordinator, GOPIF

Caroline Colan, Legislative Liaison and Energy Policy Analyst, GEO

Sarah Curran, Deputy Director, Climate Planning and Community Partnerships, GOPIF

Andy Cutko, Bureau of Parks and Lands Director, DACF

Jackie Farwell, Deputy Director, Strategic Communications and Public Affairs, GOPIF

Tom Gordon, Soil and Water Conservation Program Coordinator, DACF

Rachael Hamilton, NOAA Coastal Zone Management Fellow, DMR

Abigail Hayne, Youth Climate Engagement Fellow, GOPIF

Margaret Kelly-Boyd, Natural Resources Climate Policy Advisor, GOPIF

Scott Kleiman, Policy Director, Economy and Workforce, GOPIF

Stacy Knapp, Director of Division of Air Quality Assessment, Bureau of Air Quality, DEP

Taylor LaBrecque, Senior Planner, MaineDOT

Craig Lapine, Bureau of Agriculture, Food and Rural Resources Director, DACF

David Ludwig, Senior Climate Planner, DACF

Megan Mansfield-Pryor, Waste Management Climate Policy Advisor, GOPIF

Daniel Matz, Policy and Data Analyst, Economy and Infrastructure, GOPIF

Jen Langland, Contractor, MaineDOT

Sierra Millay, Transportation Planning Specialist, MaineDOT

Brittany Peats, Local Foods Procurement Planning and Research Associate, DACF

Jenna Isaacson Pfueller, Communications Manager, GOPIF

Nathan Robbins, Climate Change Specialist, DEP

Anthony Ronzio, (former) Deputy Director, GOPIF

Jo D. Saffeir, Special Assistant to the Commissioner, DACF

Jessica Scott, Senior Climate Advisor, GOPIF

Amalia Siegel, Maine Climate Council Coordinator, GOPIF

Ethan Tremblay, Policy and Markets Program Manager, GEO

Jesica Waller, Director, Division of Biological Monitoring and Assessment, DMR

Andrew Whitman, Maine Forest Service Climate/Carbon Specialist, DACF

Engagement and Outreach Partners

Thank you to faculty and students at the University of Maine's Mitchell Center for Sustainability Solutions who supported the Council's efforts to engage underrepresented communities in climate action planning and contributed to the final report. Thank you also to the partner organizations that worked with the Mitchell Center to hold engagement activities with members of underrepresented communities.

University of Maine Mitchell Center Authors

Dr. Sharon Klein, Associate Professor[1], Dr. Caroline Noblet, Associate Professor, Dr. David Hart, Director[2], Dr. Linda Silka, Senior Fellow[2], Catherine Mardosa, Post-MA Research Assistant, Louise Chaplin, Post-BS Research Assistant[2], Sonia Leone, Undergraduate Student Research Assistant[3], Janine Siqueira Borges, Graduate Student Research Assistant[4], Katherine Simmons, Undergraduate Student Research Assistant[5], Faizan Saif, Graduate Student Research Assistant[6], Edgelynn Venuti, Undergraduate Student Research Assistant[5], Miles Jones, Undergraduate Student Research Assistant[7], Solomon Agbesi, Graduate Student Research Assistant[8], Jasmine Lamb, Doctoral Student, Passamaquoddy Tribal Member[9], Dr. Cressica Brazier, Research Fellow[10], William (Hayna) Francis, Old Town High School Research Assistant[11]

University of Maine Mitchell Center Partner Organizations

A Climate to Thrive, Aroostook County Action Program, Center for an Ecology-Based Economy, Coastal Enterprises Inc., Community Organizing Alliance, Community Sustainable Energy Team , Governor's Cabinet on Aging, Island Institute, Kennebec Valley Community Action Program, Maine Climate Action NOW!, Maine Conservation Alliance, Maine Council on Aging, Maine Multicultural Center, Maine Environmental Education Association, Maine People's Alliance, PassivhausMAINE, Resilient Communities L3C, Sunrise County Economic Council, UMaine Center on Aging, WindowDressers, York Ready for Climate Action

1 School of Economics and Senator George J. Mitchell Center for Sustainability Solutions, University of Maine
2 Senator George J. Mitchell Center for Sustainability Solutions, University of Maine
3 Anthropology and Sustainability, University of Maine
4 Economics, University of Maine
5 Ecology and Environmental Sciences, University of Maine
6 Resource Economics and Policy, University of Maine
7 International Affairs and Economics, University of Maine
8 Environmental Economics and Sustainable Industrialization, University of Maine
9 Ecology and Environmental Sciences, University of Maine; Sipayik Resilience Committee Chair
10 Maine Community-Led Energy and Climate Action Network (MAINECAN), Senator George J. Mitchell Center for Sustainability Solutions
11 Wabanaki Youth in Science (WaYS) Program

PHOTO ACKNOWLEDGEMENTS

Cover Image: Rachel Carson Wildlife Sanctuary | Stock

Table of Contents: Harpswell Winter Sunset | Stock

Plan Goals
Page 8: Stock

Page 10: Aroostook County | Paul Cyr

Page 12: Cape Porpoise Harbor | Stock

Page 13: Stock; An electric Biddeford Saco Old Orchard Beach Transit Bus leaves the Saco Transportation Center | Maine Department of Transportation

Page 14: Bayside Anchor Apartments | Jeffrey Stevensen Photography

Page 15: Courtesy of the Governor's Energy Office

Page 16: BNRG/Dirigo Solar Array, Augusta, Maine | Gabe Souza Photography

Page 17, 18: Stock

Page 19: GOPIF

Implementing the Plan
Page 20-21: St. George Lake, Liberty | Stock

Tracking Progress
Page 23: Stock

Maine Climate Action Plan Goals
Page 30: Courtesy of DECD
Page 33: Courtesy of City of Rockland
Page 34: Courtesy of Island Institute
Page 35: Stock
Page 36: GOPIF

Strategy A
Page 38: An electric Biddeford Saco Old Orchard Beach Transit Bus leaves the Saco Transportation Center | Maine Department of Transportation

Page 41: Courtesy of Maine Department of Transportation

Page 42: GOPIF

Page 44: Courtesy of Sierra Toomey/ Natural Resources Council of Maine

Page 46: Courtesy of Dylan Pardue

Page 47: Maine Department of Transportation

Page 49: Courtesy of Greater Portland Council of Governments (GPCOG)

Page 50: Courtesy of Maine Department of Transportation

Page 51: Courtesy of Bath Iron Works

Page 53: Courtesy of Maine Department of Labor

Page 54: Penobscot Narrows Bridge | Stock

Page 55: Courtesy of Maine Department of Transportation

Strategy B
Page 56: Heat pump installation, Belfast, Maine | Gabe Souza Photography

Page 59: GOPIF

Page 65: Courtesy of Cory Falabella

Page 66, 67: Courtesy of Avesta Housing

Page 69: Courtesy of Marianna Casagranda

Page 70: 3D-printed BioHome | Courtesy of the University of Maine

Page 71: Courtesy of TimberHP

Page 72: Heat pumps being installed in Lamoine Schools | Courtesy of Town of Lamoine

Page 74-75: Ray Building | Credit: © Darren Setlow Photography; Architect/ Engineer: WSP Buildings; Envelope Consultant: LeMessurier

Strategy C
Page 76: Installation work at Downeast Wind in Columbia, Maine | Courtesy of the Governor's Energy Office

Page 78: Wind turbines in rural Maine | Stock

Page 80: Stock

Page 85: GOPIF

Page 86: Courtesy of Foxcroft Academy

Page 88: Graphic by Kate Howe/Better Yet

Page 90: Courtesy of Governor's Energy Office

Page 91: Courtesy of Black Fly Media

Strategy D
Page 92: BNRG/Dirigo Solar Array, Augusta, Maine | Gabe Souza Photography

Page 95: GOPIF

Page 97: Courtesy of ReVision Energy

Page 98, 99: Courtesy of Governor's Energy Office

Page 100: Courtesy of Nyle Systems

Page 102: Courtesy of the University of Maine

Page 103 Courtesy of Jamie Snook

Page 104: Top: Courtesy of Maine Department of Labor (DOL): Bottom: Courtesy of Lucas Huff

Page 105: Courtesy of Governor's Energy Office

Strategy E
Page 106: Stock

Page 108 Courtesy of Maine Department of Tourism

Page 111: Courtesy of Bates College

Page 112,113: Stock

Page 114-115: Courtesy of Maine Department of Agriculture, Conservation and Forestry

Page 117: Mars Hill | Paul Cyr

Page 118-119: Courtesy of Randy Martin/ Central Aroostook Soil and Water Conservation District

Page 120: Courtesy of the University of Maine

Page 122: Courtesy of Maine Climate Science Information Exchange

Page 123: Courtesy of Manomet Conservation Sciences

Page 124: Courtesy of Agri-Cycle

Strategy F
Page 126-127: Courtesy of Island Institute

Page 129, 130, 132: Courtesy of Maine Department of Transportation

Page 133: Flooding at Spinning Mill, Skowhegan, Maine | Courtesy of DECD

Page 134: Courtesy of Island Institute

Page 137: Courtesy of Maine Department of Tourism

Page 138: Courtesy of Black Fly Media

Page 139: Courtesy of Maine Department of Transportation

Page 142-143: Bass Harbor, Mt. Desert Island, Maine | Stock

Page 146: Courtesy of Island Institute

Page 148: Downtown Hallowell, Maine | Stock

Page 149: Courtesy of Maine Office of Community Affairs

Page 150: Stacked waste materials collected for recycling | Stock

Strategy G
Page 152-153, 155, 156, 157: GOPIF
Page 158: courtesy of York Ready for Climate Action
Page 161: courtesy of ecomaine; courtesy of Edge Venuti
Page 162: courtesy of Island Institute
Page 165, 166: GOPIF
Page 169, 175: Courtesy of DECD

Back Cover
Courtesy of Jennifer Eriksen and Governor Janet Mills

"This plan will serve as our playbook for the next steps we must take. It is this plan that will give us the resolve to protect Maine, through whatever storms and instability may come our way. Together, with ingenuity and grit, with a commitment to one another and to all those who are to follow, we will continue to do all we can to fight climate change, to protect our people and our health, to strengthen our economy and create good-paying jobs, and—most importantly—to ensure that the Maine we love today remains the Maine that our children and grandchildren can love tomorrow."

—Governor Janet T. Mills


Maine.gov/climateplan