A FOUR-YEAR PLAN FOR CLIMATE ACTION

MAINE

WON'T WAIT

MAINE CLIMATE COUNCIL

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ANNUAL REPORT

DECEMBER 1, 2023

FROM THE CO-CHAIRS

Since it was released in December 2020, *Maine Won't Wait* has become synonymous with climate action in Maine, creating historic momentum for reducing emissions, advancing clean energy, and protecting Maine's infrastructure and environment from climate effects.

This is the third year of *Maine Won't Wait*, and a milestone moment to take stock of what the plan has helped Maine achieve so far, and to cast our attention to the future, as the Maine Climate Council begins its work to deliver an updated climate action plan by December 1, 2024.

As co-chairs of the Maine Climate Council, which was created in statute by Governor Janet Mills to develop the state's climate plan, we are proud of the work by so many people, communities, and organizations to advance the objectives of *Maine Won't Wait*. At the same time, we are excited and energized at the prospect of diving into the planning process anew, to build upon the extraordinary momentum of the past three years.

The past 36 months are a study in contrasts. On one side, the effects of climate change in Maine, our nation, and our world remain dire. Just here in our home state, extreme weather has caused millions of dollars in damages to valuable infrastructure, which is putting strain on communities that are only now preparing for the reality of damage of this magnitude.

On the other side, the financial and technical wherewithal to act on climate change has arguably never been greater. Today, 174 communities are participating in the Community Resilience Partnership, which is helping cities, towns, and Tribal governments to identify climate and resilience priorities and start or expand local climate planning and actions.

And historic federal legislation passed over the last three years – the American Rescue Plan Act (ARPA), the Bipartisan Infrastructure Law (BIL), the Inflation Reduction Act (IRA) and the Chips and Science Act (CHIPS) – is delivering unprecedented support for climate and resilience priorities to upgrade community infrastructure, weatherize low-income homes, expand electric vehicle charging, and more.

The IRA in particular has created incentives for homeowners, businesses, communities, schools and more to invest in critical technologies such as heat pumps, electric vehicles, battery systems, rooftop and community solar energy, that are central to curbing greenhouse gas emissions, slowing warming, and reducing our reliance on fossil fuels. For more about these incentives, check out the Maine Climate Council's handy guides on maine.gov/climateplan.

These incentives will continue the considerable momentum on climate action started by Maine people. This past July, we celebrated a major achievement of *Maine Won't Wait* – surpassing, two years early, our plan's goal of installing 100,000 heat pumps in Maine by 2025. To mark the occasion, Governor Mills set a new goal of 175,000 additional heat pumps by 2027, a bold step forward that other states around the nation are citing to advance efforts to install high efficiency heat pumps.

(After all, the saying is "As Maine goes...")

Also in that vein, the economic opportunities from addressing climate change are also coming to the fore in Maine. This year, TimberHP in Madison officially opened to produce climate-friendly wood-fiber insulation, an innovative product to help both increase the efficiency of buildings while sequestering carbon at the same time.

This trailblazing factory shows Maine's potential in climate technology, as evidenced by our designation as a federal "tech hub" for innovative bio-based products through the CHIPS and Science Act, and continued success by Maine-based companies to develop products and services central to addressing climate change, on everything from generating renewable energy from our rivers, supporting the electrification of vehicle fleets, to developing exciting new ocean products that expand Maine's burgeoning blue economy.

Although much progress has occurred under *Maine Won't Wait*, the Climate Council – as part of its work to update the climate plan for the next four years – is examining the critical challenges that lay ahead.

While the upheaval in global energy markets of the past two year has eased, for now, it remains imperative to reduce our dependence on fossil fuels. This is more than just a climate imperative for reducing emissions – it is now vital for the safety and security of Maine people, businesses, and communities from hardships caused by unpredictable, unaffordable energy costs.

Planning for clean energy requires important dialogues and discussions with communities across the state, to ensure infrastructure investments are done responsibly to unlock significant new economic and workforce benefits, and that Maine's most vulnerable communities and populations share in the benefits from these opportunities.

The Council will weigh these matters, and many more, as it works to update *Maine Won't Wait* over the next 12 months. We know the damage that climate change, if unaddressed, poses to our people, communities, and economy. The Council's work comes as science is telling us to redouble our efforts, federal legislation is backing climate action with unprecedented support, and the chance to make impactful steps in Maine to curb emissions, create jobs and investment, and reduce our nation-leading reliance on fossil fuels is within reach.

In other words, Maine can't wait, and Maine won't wait.

As Council co-chairs, we are proud to lead this assembly of scientists, citizens, business leaders, and bipartisan public officials. We thank everyone for their partnership in our work, invite you to share your thoughts and ideas with the Council during the important year ahead, and look forward to putting forward a climate plan in the coming year that protects Maine people, communities, and environment for the next four years, and beyond.

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

Melanie Loyzim, Commissioner
Department of Environmental Protection

Tracking the Progress of *Maine Won't Wait*

12,369
Electric & Plug-in Hybrid Vehicles

Goal: 219,000 by 2030

459
Public EV Charging Stations

Up from 235 in 2019

51%
Clean Energy Use

Goal: 80% by 2030

15,019
Clean Energy Jobs

Goal: 30,000 by 2030

25%
Below 1990 Greenhouse Gas Emissions

Updated Figure for 2019

75%
of the way to Carbon Neutral

Goal: 100% Carbon Neutral by 2045

(75% of Maine GHG emissions absorbed by Maine ecosystems)

This dashboard tracks numerical targets included in *Maine Won't Wait* to inform the public and help evaluate whether evidence-based adjustments, enhancements or replacements to policies are needed in pursuit of the plan's climate objectives. Over time, the dashboard will expand to include other key *Maine Won't Wait* metrics as updated data becomes available, new programs are established, and state and federal climate investments are realized.

115,442
New Heat Pumps since 2019

New Goal: 275,000 by 2027

12,705
Homes Weatherized since 2019

Goal: 17,500 by 2025

22.2%
of Maine Land Conserved

Goal: 30% by 2030

174
Communities in Resilience Partnership

Visit our online dashboard to learn more: maine.gov/climateplan/dashboard

Equity Update and Metrics

The Equity Subcommittee of the Maine Climate Council was established to support ongoing planning and implementation of the state's climate strategies to ensure shared benefits across diverse populations in Maine.

Over the past two years, the Equity Subcommittee met to review *Maine Won't Wait*, and to make recommendations for ensuring that all Mainers can benefit from climate action. Last spring, the Equity Subcommittee delivered its final recommendations for submission to the Maine Climate Council. The recommendations are now being incorporated into the climate action planning process in several ways.

The Equity Subcommittee will continue to support the working groups and the climate council to ensure that the benefits of Maine's climate actions reach those who most need it, and to support increased participation in state climate and energy processes.

Going forward, the annual climate action progress report will include equity metrics so we can measure progress on climate strategies to ensure climate action benefits all people in Maine, especially those who are most vulnerable. Equity outcome metrics, like the examples shown below, are aligned with the *Maine Won't Wait* indicators and assess where climate actions are happening and who is benefiting.

7,882
New Low income heat pumps since 2019

Goal: Install at least 15,000 new heat pumps in income-eligible households by 2025.

41
High Social Vulnerabilty Index (SVI) communities in Community Resilience Partnership

13%
Average energy burden among low income households (Compared to 3% overall)
source: DOE LEAD 2020

2,943
New low-income homes weatherized since 2019

75%
Infrastructure Adaptation Fund invested in medium or high Social Vulnerability Index (SVI) towns

9%
EV Rebates to low and moderate income households (As a percentage of total rebates given in 2023)

8%
of low income homes with no internet service (Compared to 2% overall)
Source: Maine Connectivity Authority

STRATEGY A

Embrace the Future of Transportation in Maine

The transportation sector is the largest source of CO2 emissions from fossil fuel combustion in Maine (49%), according to the most recent emissions report from the Maine Department of Environmental Protection (DEP). *Maine Won't Wait* includes ambitious strategies to reduce transportation emissions by transitioning to electric vehicles (EV), making transportation more efficient including medium and heavy-duty trucks, and reducing vehicle miles traveled through increased access to broadband, public transit, and opportunities to bike and walk.

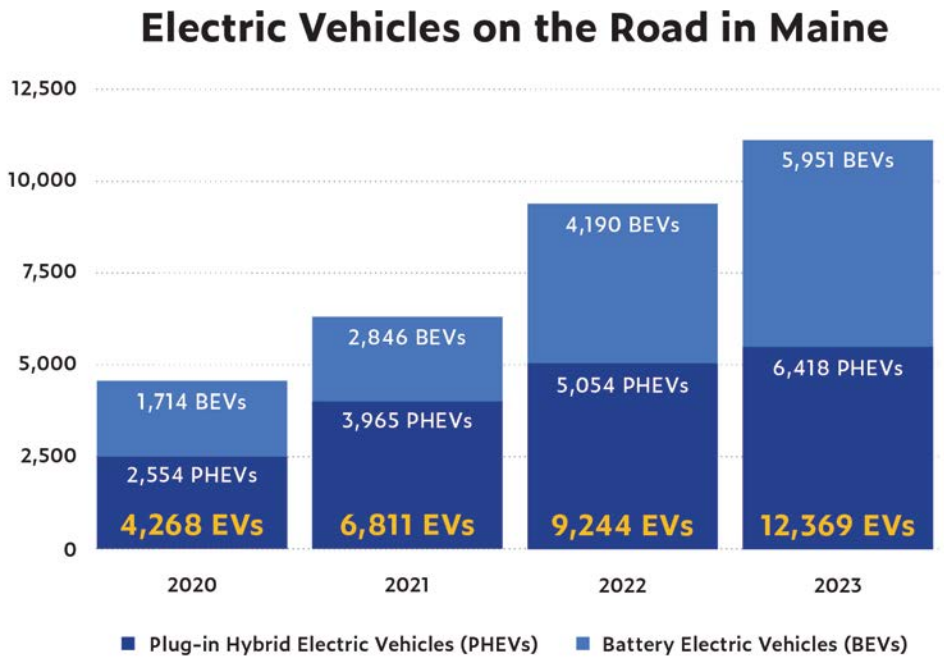
Access to reliable, convenient, and affordable charging is critical to EV usage. In the last year, the state has accelerated EV charging deployment, investing in a statewide network of public, high-speed EV chargers, including leveraging significant federal funds. New programs at Southern Maine Community College and Washington County Community College offer courses in EV repair, to ensure that we have the workforce to support Maine's transition to EVs. Federal funding continues to support the purchase of electric school buses to transport students between home and school, and Maine's public transit agencies have 4 electric buses in service and 2 more ordered. MaineDOT is promoting active transportation through updates to Department policies and plans, such as the Statewide Active Transportation Plan and the Complete Streets policy. MaineDOT is also investing in innovative transportation pilots such as e-bike sharing and workforce transportation pilots.

Charging into the Future of EVs

Recharge Maine is the State of Maine's initiative to create a convenient, reliable, and accessible electric vehicle (EV) charging network to enable EV drivers to travel across the State, from north to south and east to west. Recharge Maine helps to identify which DC Fast Charging stations have been funded by the state and are held to strict performance requirements, including an uptime of greater than 97%. Partners in Recharge Maine include the Maine Department of Transportation (MaineDOT), the Governor's Office of Policy Innovation and the Future, The Governor's Energy Office (GEO), Maine Department of Environmental Protection, and Efficiency Maine Trust (EMT).

Funding for RechargeMaine is through $8 million for public EV charging infrastructure via the Maine Jobs and Recovery Plan (MJRP) and $18 million in funds from the National Electric Vehicle Infrastructure (NEVI) program to build a national network of EV chargers through the Bipartisan Infrastructure Law (BIL). The state has also applied for $15M in funding from the first round of the Charging and Fueling Infrastructure (CFI) discretionary grant program.

Recharge Maine
State EV Charging Network



Accelerate Maine's Transition to Electric Vehicles

Expand electric vehicle use in Maine toward a target of having 219,000 on the road by 2030.

- Recharge Maine, the State's initiative to develop a statewide network of public, high-speed EV chargers, announced planned awards of more than $5 million in National Electric Vehicle Infrastructure (NEVI) Program funds authorized by the federal Bipartisan Infrastructure Law (BIL). The awards will be used to develop new DC fast chargers (DCFC) in Augusta, Ellsworth, Searsport, Rockland, Waldoboro, and Brunswick. Additional funds from the Maine Jobs and Recovery Plan (MJRP) and the New England Clean Energy Connect (NECEC) Settlement have been awarded to develop DC fast charging stations in Aroostook and Washington Counties in Presque Isle, Fort Kent, Van Buren, Medway, Houlton, Ashland, Baileyville and Machias. Efficiency Maine opened a new round of applications on October 16, 2023 for locations in Western Maine, Southern Maine, and I-95 in the Central Maine/Bangor area.

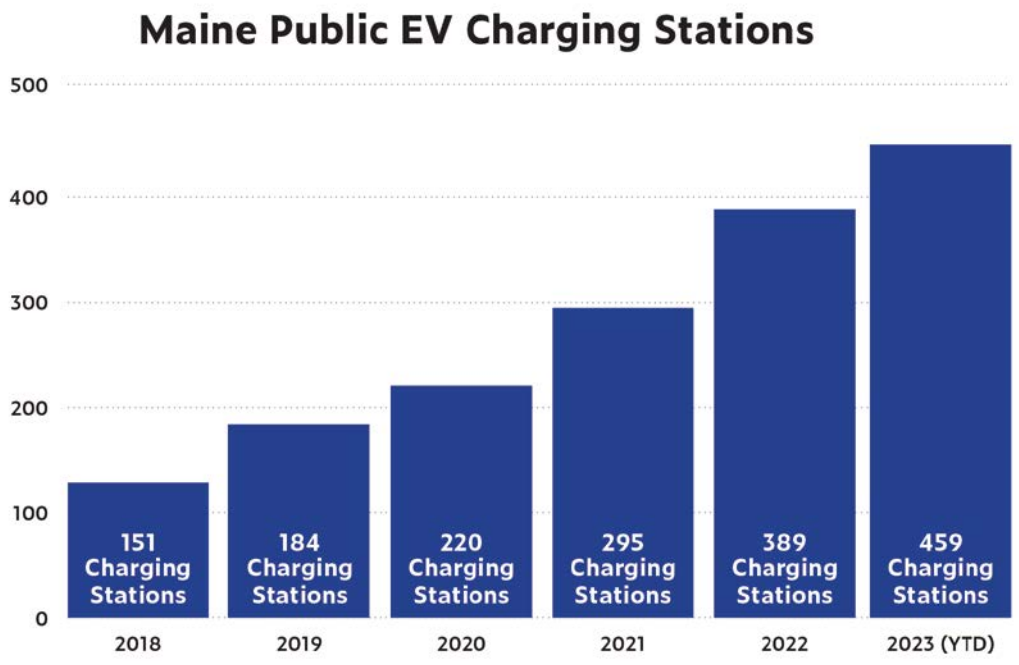
- MaineDOT submitted Maine's 2023 NEVI Plan (or Plan to Recharge Maine), which describes how the state plans to distribute the $18M of NEVI formula funds over 5 years and was approved by the Federal Highway Administration (FHWA) in September.

- Through the Recharge Maine effort, MaineDOT and Efficiency Maine have installed 237 Level 2 and 32 Level 3 ports in 101 locations since 2019. An additional 152 L2 ports in 57 locations and 59 L3 ports in 15 locations have been awarded and are awaiting installation.

- Efficiency Maine provides rebates to Maine residents, businesses, government entities, and tribal governments for the purchase or lease of a new EV or plug-in hybrid electric vehicle (PHEV) at participating Maine dealerships. In late 2022, Efficiency Maine increased their rebate for low and moderate income residents; low income residents can receive up to $7500 for a new EV and up to $3000 for a new PHEV, while moderate income residents can receive up to $3500 (EV) or $2000 (PHEV) for qualified vehicles. Low-income residents are also eligible for a rebate of up to $2,500 for the purchase of a used EV or PHEV.

- New Inflation Reduction Act (IRA) tax provisions provide up to $7,500 to individuals, businesses, and – thanks to new guidance – tax exempt entities to purchase new electric vehicles. Starting in 2024, car dealerships will be able to offer the incentive at the point of sale.

- As of October 2023, there were over 12,000 battery electric and plug in hybrid vehicles registered in Maine.



Data source: NREL Alternative Fuels Data Center, Alternative Fueling Station Counts by State

Develop a Clean Transportation Roadmap (by 2022).

- The Clean Transportation Roadmap, prepared by outside consultant The Cadmus Group, was published in December 2021. It offered recommendations to enhance the EV market in Maine, expand charging infrastructure, evaluate effects on electric utilities and the grid, and ensure an equitable and affordable transition to clean transportation for all people in Maine.

Encourage Electric, Hybrid, and Alternative Fuel Medium and Heavy-Duty Vehicles (by 2022).

- MaineDOT has invested more than $550,000 to assist 12 transit agencies with the development of plans to transition their fleets to electric or hybrid vehicles. Eight of these plans have been completed to date. Transit agencies include: Bangor Community Connector (Bangor CC), BSOOB serving Biddeford-Saco-Old Orchard Beach, CityLink serving Lewiston/Auburn, Downeast Transportation, Inc (DTI) serving Hancock County and Acadia National Park, Greater Portland Metro, Regional Transportation Program (RTP) - paratransit agency serving Cumberland County, South Portland Bus Service (SPBS), York County Community Action Corporation (YCCAC) – bus and paratransit agency serving York County, Kennebec Valley Community Action Program (KVCAP), Waldo Community Action Partners (WCAP), Western Maine Transportation Services (WMTS), and Aroostook Regional Transportation System (ARTS).
- MaineDOT has supported the purchase of electric transit buses for the bus agency serving Biddeford-Saco-Old Orchard Beach (BSOOB) (2 buses) and Greater Portland Transit District (GPTD) Metro (2 buses). MaineDOT has committed state funds for BSOOB to purchase two additional electric buses.
- Bangor's Community Connector was awarded funding from the US DOT's Low and No Emission (Low-No) Vehicle Grant Program to rehabilitate its bus storage facility, which includes upgrading the facility to accommodate future electric bus charging.
- A $294,000 grant from the Northern Border Regional Commission will fund a charger for elec-

tric airplanes and two chargers for EVs at the Knox County Regional Airport. The chargers will be installed in spring of 2024.

- Acadia National Park tested two battery electric buses in September 2023 in partnership with Downeast Transportation Inc., the organization that runs the park's Island Explorer bus service. The National Park Service reported that the pilot will help test the feasibility of converting the Island Explorer bus fleet from propane to electric.
- Maine schools were awarded 34 electric buses through EPA's Clean School Bus Program, making Maine #4 in the country per capita for awards. All buses awarded were in priority communities. Schools are currently operating electric buses on Mount Desert Island, and in Camden, Rockland, Winthrop, Vinalhaven, Yarmouth, and Old Town – some of which were purchased without EPA funding. EPA announced a second round of Clean School Bus funding in September 2023; applications from schools and transportation contractors are due at the end of January, 2024.
- The State of Maine recently selected a consultant to complete a Clean Transportation Roadmap for medium and heavy duty vehicles (MHDV) for the state, focusing on vehicle technology forecasts, charging needs, policy recommendations, and operational needs of Maine's truck owners and operators. This roadmap was a recommendation of the state's 2021 Clean Transportation Roadmap, which primarily focused on light duty passenger vehicles.

Increase Fuel Efficiency and Alternative Fuels

Support Increased Federal Fuel Efficiency Standards.

- The Board of Environmental Protection is currently considering vehicle emissions regulations which seek to increase the number of electric vehicles available for Maine people to purchase from Maine dealerships.
- The State of Maine has joined with other states in the U.S. Climate Alliance to express support for increasingly stringent federal fuel efficiency standards for light, medium, and heavy duty vehicles.

Increase freight industry participation in EPA's SmartWay program by 2024.

- The Maine Motor Transport Association (MMTA), with support from MaineDOT, promotes enrollment in the US EPA's SmartWay program. SmartWay is a voluntary program that helps companies advance supply chain sustainability by measuring, benchmarking, and improving freight transportation efficiency. There are currently more than 30 SmartWay members who are either headquartered or operate in Maine. MMTA provides information about the program, its benefits for owners and operators of large trucks, and how to get started.

Increase local biofuel and biodiesel production and use by 2024.

- MaineDOT continues to use locally produced biofuel to heat 11 facilities, and biofuel in vehicles, which reduces carbon emissions compared to

First Lady Visits EV Repair Program

In April, Dr. Jill Biden and U.S. Secretary of Education Miguel Cardona, along with Congresswoman Chellie Pingree, visited Southern Maine Community College (SMCC)'s Johnson Automotive Technology Center (JATC), visiting with Automotive Technology Chair Ruth Morrison and her students. Dr. Biden and Secretary Cardona met with Arielle D'Haiti, who demonstrated how she uses diagnostic tools to analyze EV systems. Funding from the Clean Energy Partnership, a workforce program recommended by *Maine Won't Wait* and created using Federal funds through the Maine Jobs & Recovery Plan, is expanding workforce trainings in Electric Vehicle Repair for technicians, which includes a 2022 award to Kennebec Valley Community College.

petroluem-based alternatives. In Q3 2023 MaineDOT had nearly 45,000 gallons of biodiesel delivered, resulting in a reduction of more than 165,000 lbs of carbon dioxide compared to petroleum-based fuels.

Higher-efficiency vehicle incentive program.

- The Clean Transportation Roadmap evaluated current research on "Cash for Clunkers" programs and reported that this kind of program has potential to rapidly accelerate combustion vehicle stock turnover, benefiting low-income individuals who are most burdened by transportation pollution. Equitable design can ensure that the majority of benefits flow to the lowest income individuals..

Reduce Vehicle Miles Traveled

Encourage development that supports the reduction of VMT (by 2024); Reduce light-duty VMT over time, achieving 10% reductions by 2025 and 20% by 2030. Reduce heavy-duty VMT by 4% by 2030.

- MaineDOT completed its initial Family of Plans in early 2023, including the Maine State Active Transportation Plan, the Maine State Rail Plan, and the Maine State Transit Plan, which provide recommendations for how MaineDOT can improve their multimodal transportation system and increase use of modes other than single-occupancy vehicles. More information is available through the Family of Plans storymap.
- MaineDOT developed a Carbon Reduction Strategy (CRS), through the $30M Bilateral Infrastructure Law (BIL) Carbon Reduction Program, which builds on the Family of Plans effort. The CRS provides an overview of MaineDOT's strategy to reduce Maine's carbon emissions from transportation and identifies different types of eligible projects that support these efforts. The CRS includes VMT reduction as an overarching goal and proposes strategies including enhancing active transportation options through prioritizing first and last mile infrastructure, supporting local, non-motorized trips, filling gaps in Active Transportation network, investing in equipment to support demonstrations and pilot programs, and improving transit service and accessibility through small, cost-effective options.
- MaineDOT has reassessed the process for setting speed limits to consider factors to no longer depend on an 85 percentile. Instead, setting speed will involve looking at the context of the road. The new process is expected to be announced in December 2023.
- MaineDOT has several ongoing initiatives that are expected to reduce speed and increase safety for all users of the roadway in village settings. These initiatives include the Village program, Gateway Treatments, and an updated Complete Streets policy (update expected in spring 2024).
- E-bike pilots:
  - MaineDOT has supported an e-bike bikeshare program in Portland since summer 2022.
  - MaineDOT and the Department of Labor (DOL) are working with the Bicycle Coalition of Maine (BCM) to pilot e-bikes with up to 10 eligible participants from existing DOL programs in the Bangor area.
  - In partnership with the Bicycle Coalition of Maine (BCM), MaineDOT is operating a small fleet of 10 e-bikes that are available for demonstrations at public or corporate events to promote bicycle commuting, safety, and the use of e-bikes as a transportation alternative.
- In 2023 the Maine Legislature made steps towards encouraging housing density, especially in community "growth areas" and for affordable housing through the passage and implementation of LD 2003 which includes requirements to allow increases in housing density and creates a new Housing Opportunity Program and Fund to support community planning for smarter growth.
- In 2023 the Maine Legislature passed a bill authorizing Efficiency Maine Trust to add electric bicycles to the electric vehicle rebate program for low- and moderate- income individuals and entities that serve those individuals. Efficiency Maine Trust is evaluating options for an electric bicycle pilot.

Workforce Transportation Pilot Programs

In recent years, Maine businesses have had to look farther afield to connect with job seekers that meet their skillsets. The Workforce Transportation Pilot Program expands access to reliable transportation, especially in rural Maine, to connect workers with employment opportunities.

This program provides workforce support through ridesharing, vanpools, e-bike opportunities, and other subsidized transit options

The State of Maine has implemented a multi-faceted approach to address the transportation challenges that its workforce faces. Nearly 4,000 employees descend on BIW's Bath shipyard daily, with over half of employees commuting more than 70 miles round trip.

General Dynamics Bath Iron Works (BIW) has used funding from the Workforce Transportation Pilot program, a workforce program recommended by *Maine Won't Wait* and created using Federal funds through the Maine Jobs & Recovery Plan, to expand bus service for employees from Lewiston to Bath, with an additional stop in Lisbon Falls.

The Blue Line Express bus has seen increases in ridership since it began in April and represents a critically reliable means of transportation for employees commuting from the Lewiston area. BIW has further expanded its involvement with GO MAINE, the statewide commuter program to help employees find rides to work and offer emergency rides home.

BIW employees have made greener choices by taking vanpools and carpools, biking, walking or telecommuting, amounting to 12,715 greener trips, 270,937 miles not driven, 116 tons of emissions prevented, and 11,890 gallons of gas saved. BIW commuter participation resulted in the company winning the GO MAINE Team Spirit award for the May 2023 program. Further expansion to green transportation infrastructure is expected to be operational by the end of 2023.

BIW commuters from the WMTS Blue Line Express between Lewiston and Bath share their satisfaction with the new program.

Thanks to the Maine Workforce Transportation Pilot Program, a workforce program recommended by *Maine Won't Wait* and created using Federal funds through the Maine Jobs & Recovery Plan, Gagne Foods, located in Bath, Maine has been able to implement two programs for employees who would otherwise not have transportation to work.

The e-Bike program rolled out in June 2023 and provided 8 electric assist bikes and gear to those who would use them to get to/from work daily. The pedal assist system on the bikes helps riders get around faster and more easily. Six months and over 1,000 rides, the recipients continue to be grateful for the opportunity to be part of this unique project. Winter tires are coming soon, so a green alternative for some of our workforce can be utilized year-round. In addition, an Inclement Weather pilot program was introduced in Feb. 2023 for employees living in the greater Bath area who did not have adequate transportation to/from work in the event of inclement weather. Several employees have utilized these funds for about 150 rides and are warmer and drier when they arrive to work or their homes.

Deploy high-speed broadband to 95% of Maine homes by 2025 and 99% by 2030.

- $315 million in broadband funds was awarded to Maine through the Bipartisan Infrastructure Law, building on nearly $200 million from other federal and state funding sources to deploy high-speed broadband across Maine. High-speed, affordable broadband supports telecommuting, remote education, telehealth, and access to online services to reduce travel. It also supports connected energy systems and devices to increase energy efficiency and technology access in rural areas.
- Since 2021, 53,370 connections have been enabled through Maine funding, according to the Maine Connectivity Authority (MCA). 50% (26,000) of those connections have been funded in the last 10 months.
- 18,000 new households have enrolled in the Affordable Connectivity Program (ACP) since the MCA launched the ACP4Me campaign in April. 38.7% of eligible households now participate. 25% of ACP users are first time internet subscribers.
- MCA published a five-year Broadband + Digital Equity Action plan completed in August 2023. Maine is the first state in the country to complete a digital equity plan.

Increase public transportation funding by 2024.

- As mentioned above, MaineDOT prepared the Carbon Reduction Strategy (CRS), a requirement of the $30M BIL Carbon Reduction Program. The CRS includes numerous goals and strategies related to reducing carbon emissions in the transportation sector, including reducing VMT through small, cost-effective projects to improve transit service and accessibility.
- Three projects that have been awarded funding through MaineDOT's workforce transportation pilot program incorporate clean vehicles (Timber HP/GO Lab, Sunday River, and Gagne Foods). The Timber HP/GO Lab project includes 8 Level 2 and 2 Level 3 chargers designated for cars and vans, additional charging stations at collaborating employers, the lease or purchase of 1+ vans, 1 electric vehicle, and 5+ e-bikes. The Sunday River project includes 1 electric van and the Gagne Foods project included 12 e-bikes.

Relaunch GO MAINE by 2022.

- Since re-launching GO Maine in 2022, MaineDOT estimates that the commuter service has reduced over 2 million vehicle miles traveled by promoting rideshare and carpooling options. In FY2023, the more than 10,000 GO MAINE members have saved more than 100,000 gallons of gas or nearly 1,000 tons of CO2 emissions.

STRATEGY B

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

As Mainers continue to experience high heating fuel costs due to the volatility of global energy markets, the State is continuing to invest in energy efficient, smart and cost-effective homes and businesses. Maine reached a milestone in 2023, when the state surpassed its original goal of installing 100,000 new heat pumps by 2025. In response to that achievement, Governor Mills set a new target of 175,000 additional heat pumps installed by 2027. Maine remains the most heating-oil dependent state in the country, with 56 percent of homes heated by fuel oil, compared to the national average of 4 percent. This means that Maine is distinctly vulnerable to the increased fossil fuel prices and volatility. The State will continue to support the deployment of 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 (IRA) are further helping to reduce Mainers' dependence on fossil fuels.

Maine Surpasses 100,000 Heat Pump Goal

The State will also continue to support efficiency in public buildings – including State, municipal and school buildings, and programs for businesses and institutions, such as health care facilities. Continued progress in the building products sector also includes the growth of Maine companies producing building products that both create good paying jobs and sequester carbon for the long-term. In July, Governor Janet Mills, along with White House Climate Advisor Ali Zaidi, announced that Maine has – two years ahead of time – surpassed its goal of installing 100,000 new heat pumps by 2025, a milestone that represents significant progress in reducing Maine's reliance on heating oil, lowering heating costs, and curbing harmful carbon emissions. Gov. Mills announced the milestone at Kennebec Valley Community College (KVCC) in Fairfield, where they toured the Maine Community College System classroom for its heat pump workforce programs. The programs have trained 558 heat pump technicians to date, including more than 250 at KVCC, which opened an all-new heat pump workforce training lab in early 2021.

To continue Maine's momentum, Governor Mills also unveiled a new target: installing another 175,000 additional heat pumps in Maine by 2027, thereby bringing the number of heat pumps installed in Maine homes, businesses, and public buildings during her time in office to 275,000. If this target is achieved, Maine would have more than 320,000 heat pumps in total installed across the state.

Installation data from Efficiency Maine show heat pumps have broad adoption in rural and northern Maine, which underscores the economic benefits of the program and success of the enhanced incentive program enacted by Governor Mills in 2019.

Transition to Cleaner Heating and Cooling Systems, Efficient Appliances

Install 100,000 heat pumps by 2025 including at least 15,000 in income-eligible households

- In July 2023, Governor Mills announced that Maine has surpassed its goal of installing 100,000 heat pumps by 2025 and set a new target to install 175,000 additional heat pumps in Maine by 2027, thereby bringing the number of new heat pumps installed in Maine homes, businesses, and public buildings to 275,000. Efficiency Maine reports that heat pumps are now more common than oil heat in new homes. Efficiency Maine and MaineHousing installed over 32,700 heat pumps in 2023, including over 1,700 in low-income households. The cumulative total of heat pumps installed in low-income homes since 2019 is over 7,800, putting Maine more than halfway to its goal of 15,000 heat pumps in low-income households by 2025.

- New data from 2022 show that 56% of Maine homes now use fuel oil (e.g., heating oil and kerosene) as their primary heating source. The number of homes heating with oil is down over 10% since 2018, and corresponds with a greater than 44% increase in the number of homes heating with electricity during the same period.

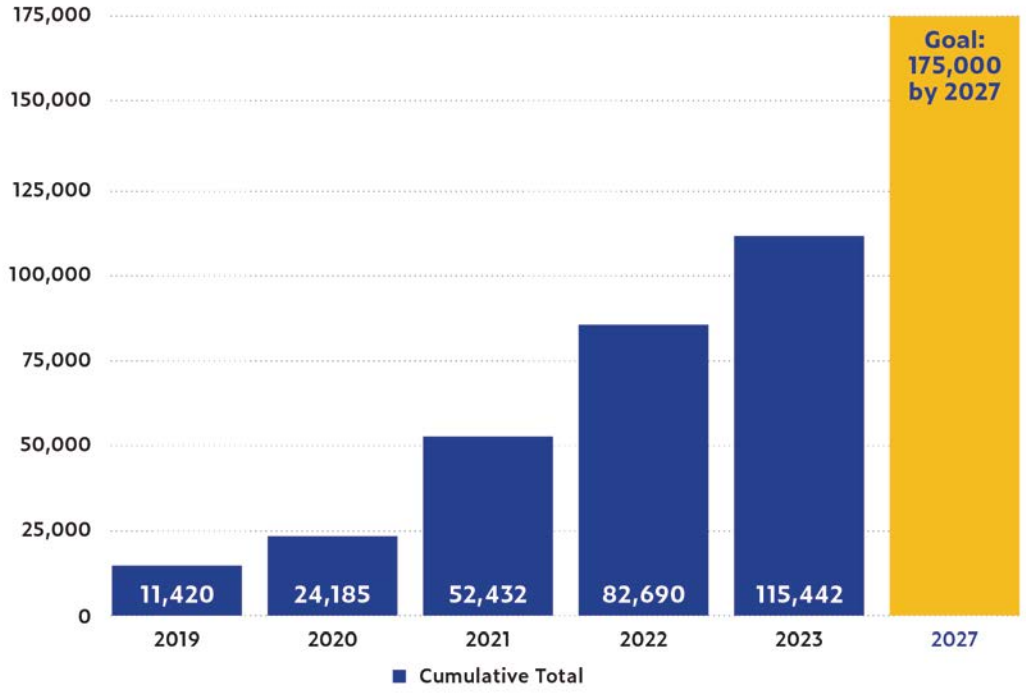
- Over 9,000 heat pump water heaters have been installed in Maine buildings over the past year (as of August 2023), for a total of nearly 50,000 heat pump water heaters installed since 2018.

- Efficiency Maine's Innovation Program is exploring the use of whole-home heat pump systems as a replacement for fossil fuel-fired furnaces in manufactured homes. To date, Efficiency Maine has completed installations in 37 manufactured homes, with 32 more in site-visit status, and 10 waiting for Residential Registered Vendors to install heat pumps.

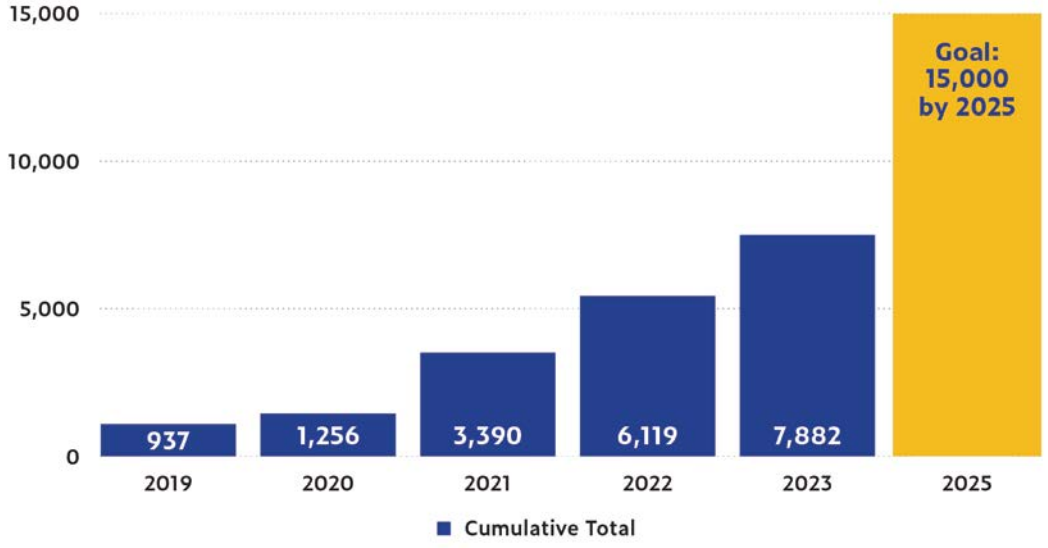
- Significant updates to Maine and federal incentives for home heating and appliances include:
  - Efficiency Maine announced a change to the heat pump rebate program in September 2023 which encourages "whole-home heat pump" systems. This change will support progress towards the goal of having 115,000 homes using whole-home heat pump systems by 2030.
  - Maine will receive $35.9 million for the Home Energy Performance-Based, Whole-House Rebates (HOME Rebates) program which will provide incentives for individual and multifamily dwellings for energy efficiency retrofits.

Governor Janet Mills and White House Climate Advisor Ali Zaidi visited Kennebec County Community College's heat pump training lab to announce that Maine surpassed its goal of installing 100,000 new heat pumps by 2025.

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 fromJuly 1 of the previous year to June 30 of the stated year. MaineHousing's reported numbers are based on a given calendar year.

- Maine will receive $35.7 million for the High Efficiency Electric Home Rebates (HEEHRA Rebates)[1] program which will provide point-of-sale rebates for energy efficiency measures in low- to moderate-income dwellings.
- The Inflation Reduction Act (IRA) increased and expanded Energy Improvement Tax Credits for both homes (Sec. 25C)[2] and commercial (Sec. 179D) buildings for energy efficient heating systems.

- The Inflation Reduction Act (IRA) created the Greenhouse Gas Reduction Fund (GGRF) with a variety of programmatic opportunities with an emphasis on projects in low-income and disadvantaged communities and greenhouse gas reduction technologies. Several Maine entities including MaineHousing, Efficiency Maine, Coastal Enterprises, Inc (CEI) and the Genesis Fund have applied to serve as a sub-recipients to various capital providers that are applying to the GGRF.
- MaineHousing applied for and was approved for $5 million via the Sustainable Energy Resources for Consumers application for their Heat Pump Program. This program will enable MaineHousing to provide beneficial electrification and fuel switching for Home Energy Assistance Program (HEAP) recipients.
- Efficiency Maine Green Bank launched Maine's Commercial Property Assessed Clean Energy (C-PACE) program in spring 2023, following the enactment of L.D. 340, An Act to Allow for the Establishment of Commercial Property Assessed Clean Energy Programs (The "C-PACE Act"). A C-PACE program provides access to loans for commercial property owners interested in undertaking energy efficiency and clean energy improvements on their buildings. The investment is recovered through savings on the consumers' energy bills. The Town of Cumberland, the City of Augusta, and the City of Westbrook are the first municipalities in the state to adopt an ordinance authorizing the use of C-PACE loans in their communities.
- L.D. 1724, The Beneficial Electrification Policy Act was signed into law in spring 2023.. It will accelerate electrification in Maine by allowing Efficiency Maine to leverage electric procurement funds for measures involving "fuel switching," such as switching from heating oil to heat pumps, where those measures are cost-effective and will reduce electrical rates over the lifetime of the measures.
- Several new initiatives at Efficiency Maine are advancing the transition to cleaner heating systems, funded by the Maine Jobs and Recovery Plan (MJRP):
  - Hospitality Initiative ($4 million): Enhanced incentives for businesses in Maine's hospitality industry for ventilation (HVAC), lighting, and refrigeration projects. To date, 50 heat pumps have been installed through this initiative.
  - Schools, Local Government, and Congregate Housing Initiatives ($15 million): Incentives for energy-efficient heating, cooling and ventilation (HVAC), lighting and refrigeration projects. To date, 67 heat pump systems have been installed through this initiative.
- Efficiency Maine, in close coordination with the Governor's Energy Office (GEO), submitted an application for the Energy Efficiency Revolving Loan Fund ($845,120) for beneficial electrification projects in congregate living facilities (i.e., long-term care facilities). Funds will be used to perform energy audits for these facilities and fund low-cost financing for implementation of a target improvement project.

Maine Appliance Standards (by 2022)

- The Department of Environmental Protection adopted a new rule, Chapter 180: Appliance Efficiency Standards, that establishes minimum energy efficiency standards and water conservation standards for certain appliances, products, and fixtures, and in doing so reduces resource consumption as well as emissions of greenhouse gases and other pollutants. The standards in the rule took effect on January 1, 2023.
- In June 2023, the Maine Legislature passed L.D. 1814, An Act to Reduce Mercury in the Environment by Phasing Out Certain Fluorescent

Light Bulbs. The bill bans the sale of certain fluorescent light bulbs containing mercury in Maine, starting on January 1, 2026.

- In July 2023, new standards set by the federal Energy Independence Act of 2007 resulted in LED General Service Lamps (GSLs) becoming the baseline technology for residential and commercial screw-in replacement lamps, effectively banning the sale of new incandescent light bulbs.

Accelerate Efficiency Improvements to Existing Buildings

Double the pace of weatherization: 17,500 additional homes and businesses by 2025 including 1,000 low-income units; 35,000 by 2030

- Efficiency Maine and MaineHousing weatherized over 3,500 homes in 2023, including nearly 1,000 low-income homes. This puts the state on track to meet its goals of weatherizing 17,500 homes and businesses by 2025 including 1,000 low-income units per year.
- Efficiency Maine launched new weatherization solutions for multifamily buildings with three or more units. These solutions include attic insulation, basement insulation, air sealing activities, and heat pump retrofits.
- Efficiency Maine has expanded its existing residential weatherization program with $25 million from the Maine Jobs and Recovery Plan to offer subsidized air sealing and insulation upgrades to low- and moderate-income homeowners. To date, Efficiency Maine has weatherized 1,070 homes through this initiative.
- MaineHousing reports that 46,944 households received benefits through the Home Energy Assistance Program (HEAP) in 2023, up from 32,861 in 2022.[3]
- MaineHousing is receiving $31 million for low-income weatherization from the federal Bipartisan Infrastructure Law. These funds will be used for multifamily weatherization, workforce training and development (e.g., incentives to build contractor capacity, insurance payment assistance, "lease to own" equipment program), and expanding the nonprofit service delivery network.

Advance the Design and Construction of New Buildings

Phase in modern, energy-efficient building codes to reach net-zero carbon emissions for new construction in Maine by 2035

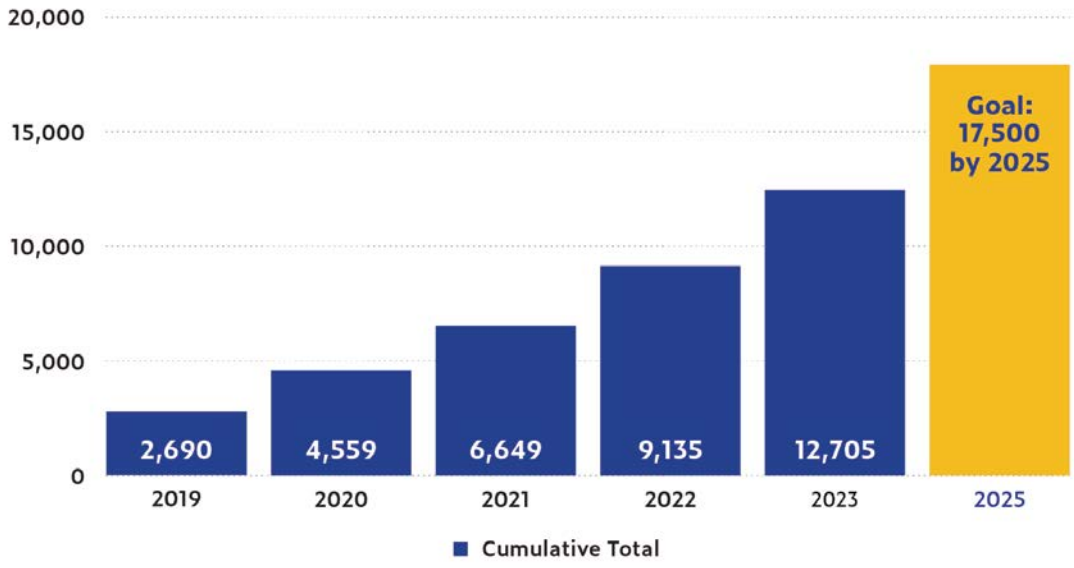
- The Maine Technical Building Codes and Standards Board is adopting the 2021 International Energy Conservation Code (IECC) including

U.S. Climate Alliance Announcement

In September, Governor Mills attended the U.S. Climate Alliance Climate Week NYC meeting in New York, NY as their co-chair as the alliance announced their new heat pump target of 20 million heat pump installations across the coalition by 2030. This includes ensuring that 40 percent of those benefits flow to disadvantaged communities. The U.S. Climate Alliance is a bipartisan coalition of 25 governors representing approximately 60% of the U.S economy and 55 percent of the U.S. population.

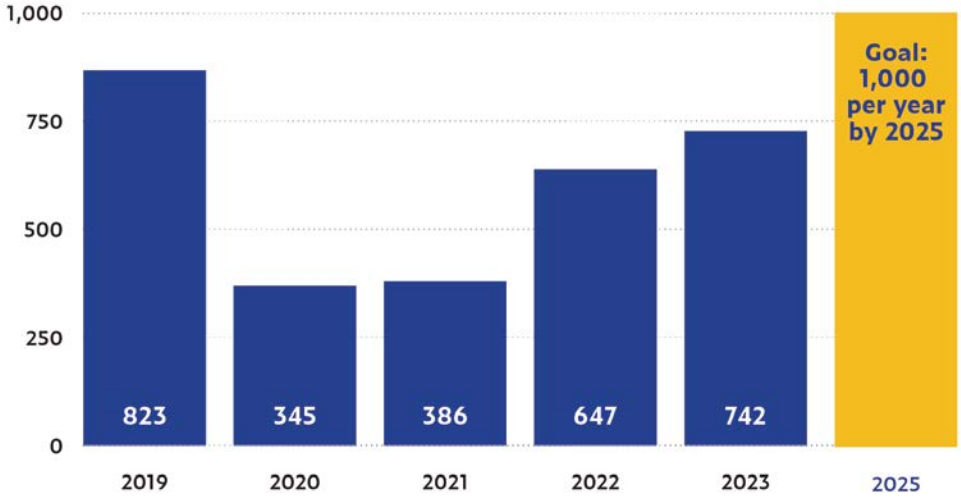
"Transitioning to heat pumps in Maine is creating good-paying jobs, curbing our carbon emissions, cutting costs for families, and making people more comfortable in their homes," said Governor Mills. "When I took office in 2019, I set a goal of installing 100,000 heat pumps in Maine by 2025. After reaching that goal two years ahead of schedule, we are now on our way to achieving our new target of 275,000 heat pump installations by the time I leave office in 2027. Maine is meeting our climate action goals, and we're proud to lead the way as part of the U.S. Climate Alliance to encourage other states to do the same."

Homes Weatherized



Source: Efficiency Maine

Homes Weatherized: Low-Income



Source: Efficiency Maine & MaineHousing

an updated stretch code for residential and commercial buildings and the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1-2019 standard into the Maine Uniform Building and Energy Code (MUBEC).

- The Maine Technical Building Codes and Standards Board will be adopting the 2021 IECC consistent with DOE guidelines for receiving more than $2.6M in formula funding for adoption, implementation, and training. An additional $1.7M will be available if the Technical Building Codes and Standards Board adopts a Zero Energy Code consistent with guidelines in the Assistance for Latest and Zero Building Energy Code Adoption Program (IRA Sec. 50131).

- MaineHousing adopted the most recent energy building codes (2021 IECC) for new construction and has committed to achieving Passive House standard equivalency in all new construction. Additionally, MaineHousing will require all new and renovation projects to install electrical service capacity for EV chargers and rooftop solar and mandates the use of electricity for heating and domestic hot water. Finally, MaineHousing's smaller development programs, including the Rural Affordable Rental Housing Program, Affordable Housing Initiative for Maine Islands and Affordable Homeownership Program require buildings to utilize all electric equipment for heating, domestic hot water, and cooking.

- New investments in energy efficient affordable housing include $50 million for new energy efficient affordable homeownership and rental housing from the Maine Jobs and Recovery plan and an additional $70 million in new investment from the most recent state budget for new energy efficient affordable rental housing. All projects must be energy efficient, use electrified heating, and be EV/PV ready.

- The Inflation Reduction Act (IRA) updated and expanded the New Efficient Home Tax Credit (Sec. 45L), which provides tax credits to eligible contractors who construct or substantially reconstruct and rehabilitate qualified new energy efficient homes, including multifamily homes.

Building code training for contractors and code- enforcement officials

- Through the Clean Energy Partnership, passivhausMAINE was awarded $180,000 to expand the reach of its Code Builder Training for energy-efficient building techniques as they relate to understanding the MUBEC and Stretch Codes, upskill current energy efficiency workers and those entering the space from the traditional building trades, and implement trainings across the State. The project includes training for 570 individuals. PassivhausMAINE has conducted 21 trainings with 253 attendees since December 2022, from York to Presque Isle.

- The Office of the State Fire Marshall is currently training building officials to the newer editions of the IECC codes to prepare them for the MUBEC transition. In 2021, Efficiency Maine also provided a series of subsidized trainings on the new building energy code. Through their "Introduction to the IECC" workshop series and six subsequent workshops on best practices for the residential and commercial codes, Efficiency Maine was able to train 765 code enforcement officers and contractors. The materials from the trainings remain available on Efficiency Maine's website.

Advance the Design and Promote Climate-Friendly Building Products

Increase the use of climate-friendly Maine forest products, including mass timber and wood-fiber insulation

- $20 million has been awarded from the Forestry Recovery Initiative, funded by the Maine Jobs and Recovery Plan and administered by the Maine Technology Institute, to support Maine's forest products industry including development of climate-friendly building materials such as wood-fiber insulation and cross-laminated timber. The second and final phase of the program, administered by the Maine Technology Institute (MTI), provided $14 million in grants ranging from $250,000 to $2,000,000 to forestry companies to support forward-looking forestry projects that address new market demands, provide new sustainable products, or otherwise advance the long-term stability of the forestry industry.

"Lead by Example" in Publicly Funded Buildings

"Lead by Example" in state government (by 2022)

- Several state agencies have demonstrated leadership on climate, clean energy, and energy efficiency since our last progress report, including:
  - More than 10 capital renovation projects to increase efficiency of state-owned buildings were completed or ongoing in 2022.
  - GOMaine reduced over 1.5 million vehicle miles traveled (VMT) between its relaunch in April 2022 and December 31, 2022; nearly 20% of these VMT were reduced by State of Maine employees who are also members of GOMaine.
  - 31% of state of Maine employees are teleworking fulltime or parttime, avoiding over 400,000 commuting miles each week.
  - 5% of new vehicles purchased in 2022 (221) were battery electric (10) or plug in hybrid electric.
  - 18 state properties have publicly accessible EV charging (44 total ports).
- In September 2023, the State of Maine joined the federal Better Buildings Challenge, committing to a reduction of GHG from state-owned buildings by 50% and an overall energy efficiency improvement of buildings by at least 20% over the next 10 years.
- New IRS rules on elective pay and transferability released in 2023 allow states and other public-sector, tax exempt entities, to access generous tax credits and other financial incentives in the areas of electric vehicles, heat pumps, building efficiency improvements, solar energy and more. This funding will be critical for achieving the state's Lead by Example goals.
- The Governor's Office of Policy Innovation and the Future (GOPIF) will manage a $1,668,790 federal grant award from the Department of Energy's Energy Efficiency and Conservation Block Grant program, prioritizing support for disadvantaged and socially vulnerable communities. $1 million of the award will be distributed to approximately 10 disadvantaged communities via competitive grant offering through the Community Resilience Partnership for energy efficiency improvements to public buildings. The remaining funds will provide "Lead by Example" support to state agencies and technical assistance to an additional 15-20 socially vulnerable communities to develop energy conservation implementation plans.

- Efficiency Maine has continued to administer Volkswagen (VW) settlement funds for state agency heating system conversions, awarding just over $100,000 in direct project funding support at a variety of state agency buildings (as of July 2023).
- The 2023–2024 state budget included a new Green Schools Director position at Department of Education to facilitate coordination between climate education, facilities, and transportation teams so schools can pursue climate action that saves money and improves student outcomes. The budget also includes funding for technical assistance for building and transportation decarbonization in schools.

Enhance grant and loan programs to support efficiency and renewable energy programs in municipal, tribal, school, and public-housing construction and improvements. Provide recognition programs for those projects making outstanding efforts.

- A $15 million MJRP-funded initiative at Efficiency Maine is helping Maine's public schools, towns, cities, and Tribal governments make energy efficiency improvements and reduce their energy costs. Most recently, as part of this initiative, Efficiency Maine launched a new Funding Opportunity Notice for Maine municipalities with between 5,000 and 10,000 residents to upgrade their heating, ventilation, and air conditioning (HVAC) systems.
- New IRS rules on elective pay and transferability will allow local governments and other tax-exempt entities to access generous tax credits and other financial incentives in the areas of electric vehicles, heat pumps, building efficiency improvements, solar energy and more.[4]
- The Efficiency Maine Green Bank Municipal Lease finance initiative is currently active and open to participation from municipalities, schools, and local lenders. This finance initiative is designed to help municipalities and schools afford the remaining project cost after an Efficiency Maine rebate. Participants can finance these co-pays through a non-debt finance vehicle known as a "municipal lease." The Efficiency Maine Green Bank pairs Efficiency Maine program participants with private, Maine-based lenders that provide this type of financing.

Heat Pumps in Hospitality: Glenmoor By The Sea

"Since the new heat pumps were installed, we have been able to open our property earlier in the season and stay open later into the fall," said innkeeper Renato Kriste. "Heat pumps are quiet, efficient, and simply look much nicer! They also get us closer to our goal of operating an efficient facility with minimal carbon footprint and enable us to invest the funds we save on utilities into improving our property and investing in our employees."

With the recent upgrades, Glenmoor by the Sea could potentially reduce annual heating and cooling costs by approximately $30,000. These incentives were made by Efficiency Maine through the Maine Jobs and Recovery Plan (MJRP) using funding from the American Rescue Plan Act (ARPA).

- The Community Resilience Partnership (CRP) offers grants to support efficiency and renewable energy programs in municipal, tribal, and school buildings. For more information on the CRP, see Strategy G.

Renewable Fuels Standard (RFS)

Investigate options for renewable Fuels Standard (RFS) for heating fuels

- The Legislature has considered action related to renewable fuels, but the legislation has not been advanced. Lawmakers and the state may consider options to advance the use of innovative renewable fuels in the future.

Replace Hydrofluorocarbons (HFCs) with Climate-Friendly Alternatives

Adopt hydrofluorocarbons phase-down regulations

- The Department of Environmental Protection has finalized regulations to implement the phase-down of hydrofluorocarbons, also known as HFC's and considered among the worst "climate super pollutants". The prohibition on certain end uses began to take effect on January 1, 2022.

Reducing Emissions and Expenses: Town of Norridgewock

In October 2022, the town of Norridgewock took advantage of Efficiency Maine's available funding opportunity for small Maine towns and installed two additional heat pumps in the town airport. The funding for this project came from the American Rescue Plan Act (ARPA)/Maine Jobs and Recovery Plan (MJRP).

"These incentives are too good to leave on the table," said Norridgewock Town Manager Richard LaBelle, a veteran of prior Efficiency Maine programs. "Like most municipalities, we face the ever-expanding pressure to keep taxes down. We were able to upgrade our lighting and install heat pumps at a fraction of the cost. The new lighting literally transformed these buildings, making them more inviting for public visitors and more pleasant workspaces. And the heat pumps enabled us to remove window air conditioners, dehumidifiers, and heaters under staff desks."

STRATEGY C

Reduce Carbon Emissions in Maine's Energy and Industrial Sectors through Clean Energy Innovation

Clean electricity from lower-emission resources is essential to support Maine's transition from fossil fuels to electricity in key sectors such as transportation and buildings. In 2023, Governor Mills set an ambitious new target to achieve 100% clean energy use in Maine by 2040. In addition, Maine law requires that 80% of electricity consumed in Maine to be renewable by 2030, with a goal of 100% by 2050. The clean energy transition must be managed effectively to ensure reliability and affordability. Pairing energy storage with small distributed and large-scale renewable resources provides opportunities to maximize the value of renewable energy to our grid. There is significant federal funding in the Bipartisan Infrastructure Law (BIL) for the expansion of affordable, clean energy generation and transmission networks. In addition, the Inflation Reduction Act (IRA) extended federal tax credits for renewable energy development, including solar (both residential and utility-scale), onshore wind, offshore wind, storage, and clean hydrogen. These federal funding opportunities are helping to support Maine's continued clean energy progress.

Offshore Wind Progress

In February 2023 the Maine Offshore Wind Roadmap was published after an 18-month stakeholder engagement process. The Roadmap outlines strategies and actions to take in order to develop an offshore wind industry in Maine that will help the state meet its climate, clean energy, and economic goals while protecting the environment and existing ocean users. Informed by the Roadmap, the state is engaging with the Bureau of Ocean Energy Management's (BOEM) planning process for the Gulf of Maine in advance of a commercial lease auction targeted for late 2024.

A key milestone was met over the summer when Governor Mills signed LD 1895 into law, which authorizes the procurement of 3 GW of offshore wind by 2040, provides for critical port development, outlines opportunities for all Maine workers and businesses, and incentivizes offshore wind development that protects the Gulf of Maine ecosystem and critical lobstering areas.

Per PL 2021, Chapter 407, Section 2, the Maine Offshore Wind Research Consortium and Advisory Board were established and began meeting in February 2023. Over the course of four meetings, the Consortium Advisory Board identified a prioritized research strategy for responsible floating offshore wind development in the Gulf of Maine and issued the first Request for Proposals in November 2023.

The state is also working to advance the proposed research lease in federal waters with BOEM with the intent to gain experience and knowledge for responsible floating offshore wind development ahead of commercial projects. BOEM's decision on the research lease is expected in early 2024.

Ensure Adequate Affordable Clean-Energy Supply

80% of Maine's energy usage from renewable generation (by 2030)

- In February 2023, based on the significant role of new clean energy in controlling volatile energy costs and advancing Maine's climate requirements, Governor Mills announced an accelerated goal of achieving 100% clean energy by 2040, and directed the Governor's Energy Office (GEO) to put forward a pathway to achieve that goal. Consistent with the Governor's directive, the GEO has launched *Maine Energy Plan: Pathway to 2040*, a comprehensive energy planning effort to analyze the energy needs and options for Maine in the coming decades with substantial engagement from stakeholders.
- Maine electric suppliers are required to provide an increasing amount of new renewable energy to Maine consumers, reaching 80% total renewable energy provided by 2030. Maine is on track to meet the standard as required by statute and reached 51% in 2023. To meet these targets in the longer term, Maine will need to make additional investments in affordable renewable energy.
- There is significant federal funding to support increased renewable energy. The federal Bipartisan Infrastructure Law (BIL) includes funding for the expansion of affordable, clean energy generation and transmission networks. The Inflation Reduction Act (IRA) encompasses $369 billion in spending for climate change related programs and grants that aim to accelerate the deployment of clean energy technologies, reduce emissions, lower energy prices, and build a reliable and affordable energy sector. There are substantial opportunities to expand clean energy manufacturing, distributed generation, building modernization, and energy efficiency.
- The IRA includes an array of energy program opportunities for State Energy Offices in the form of grants and loans from a variety of federal agencies:
  - Two-thirds of IRA's funds are in the form of federal tax credits supporting the production of electricity from clean energy sources and investments in renewable energy technologies.
  - Projects can choose between a production or investment tax credit and there are bonus credits for energy justice components such as projects on brownfield sites, in areas with significant fossil fuel employment, and in low-income or tribal communities. Credits include direct pay and transferability options which allow non-profits and municipalities to take advantage. Most programs also have prevailing wage, workforce, and/or apprenticeship requirements.

Set achievable targets for cost-effective deployment of technologies such as offshore wind, distributed generation, and energy storage

Solar

- Solar electricity generation has significantly expanded in recent years as a result of forward-looking policies on renewable energy and solar incentives passed by Governor Mills and the Legislature. Solar generation reached 204 MWac in 2022 and 180 MWac in 2023 (as of September 30th), driven largely by the rapid expansion of small-scale distributed generation projects under 5MW in size. 796 megawatts of solar is currently installed in Maine.

Offshore Wind

- After an extensive 18-month participatory process, the Maine Offshore Wind Roadmap was published in February 2023. The Roadmap is the blueprint for the State's responsible offshore wind activities to meet climate, clean energy and economic goals while protecting the environment and existing ocean users. Key milestones are listed in the bullets below.
- Governor Mills signed LD 1895 into law authorizing procurement of 3,000 MW of offshore wind to meet clean energy targets by 2040, providing for critical port development, creating opportunity for all Maine workers and businesses, and incentivizing offshore wind development that protects the Gulf of Maine ecosystem including critical lobstering areas.

Floating platform rendering shows what offshore wind structures will potentially look like in the Gulf of Maine. (Courtesy of the University of Maine)

- The State is working to advance the proposed research lease with the Bureau of Ocean Energy Management (BOEM) for the state-proposed Gulf of Maine Floating Offshore Wind Research Array in federal waters of the Gulf of Maine to gain experience and knowledge for responsible floating offshore wind development ahead of commercial projects. The State anticipates a decision by BOEM in early 2024.
- Informed by the Maine Offshore Wind Roadmap, the State is engaging in BOEM's planning process in advance of a commercial lease auction targeted for late 2024.
- In partnership with Department of Inland Fisheries and Wildlife (DIFW) and Department of Marine Resources (DMR), the Governor's Energy Office (GEO) established the Maine Offshore Wind Research Consortium and Advisory Board. The Consortium Advisory Board identified research priorities for responsible floating offshore wind development in the Gulf of Maine and issued the first Request for Proposals in November 2023. The Consortium is identifying federal, regional, and private leveraging opportunities to help fund the highest priorities.
- The Maine Department of Transportation (DOT) completed a year of stakeholder engagement through their Offshore Wind Ports Advisory Group. Maine DOT is currently conducting environmental studies to inform site selection for a floating offshore wind port at Searsport, essential to supporting renewable offshore wind development in the Gulf of Maine. DOT also has $12 million in state funding to invest in a purpose-built deep water port project and the infrastructure to support the development of an offshore wind industry in the state.

Storage

- In 2022, Efficiency Maine launched two initiatives to manage demand on the grid:
  - The "Demand Response Initiative" which pays large electricity users to reduce energy consumption during peak periods, enrolled 23 participants that curtailed 7.5 megawatts of load across 6 separate events during the 2022 summer periods of peak demand. The program increased enrollments to 174 participants for the summer of 2023; final results will be reported at the end of 2023.

- In the "Load Shifting Initiative," Efficiency Maine has purchased and launched a new Distributed Energy Resource Management System (DERMS), which gives Efficiency Maine the capacity to receive performance data from and dispatch Distributed Energy Resources (DERs) across the state. Efficiency Maine will use the DERMS platform in the year ahead to promote small batteries at homes and businesses and to manage residential EV charging.

- ISO-New England's 2023 Forecast Report of Capacity, Energy, Loads, and Transmission (2023 CELT Report) reports more than 63 MW of grid-connected energy storage projects operating in the state as of May, 2023.

- L.D. 1850 was signed by the Governor in June 2023 and modifies the state goal for energy storage development (originally established by P.L. 2021, chapter 298) to at least 300 MW of installed capacity by December 31, 2025 and at least 400 MW by December 31, 2030. It additionally allows the Governor's Energy Office (GEO) to reevaluate and increase the state goal as needed.

- L.D. 1850 also directs state government to take several additional actions to support the development of an energy storage industry in Maine:

  - Directs the GEO to evaluate designs for a program to procure up to 200 MW of commercially available utility-scale energy storage that provides net benefits to the electric grid and to ratepayers;

  - Directs the GEO to study long-duration energy storage, including opportunities for new and emerging long duration energy storage technologies; and

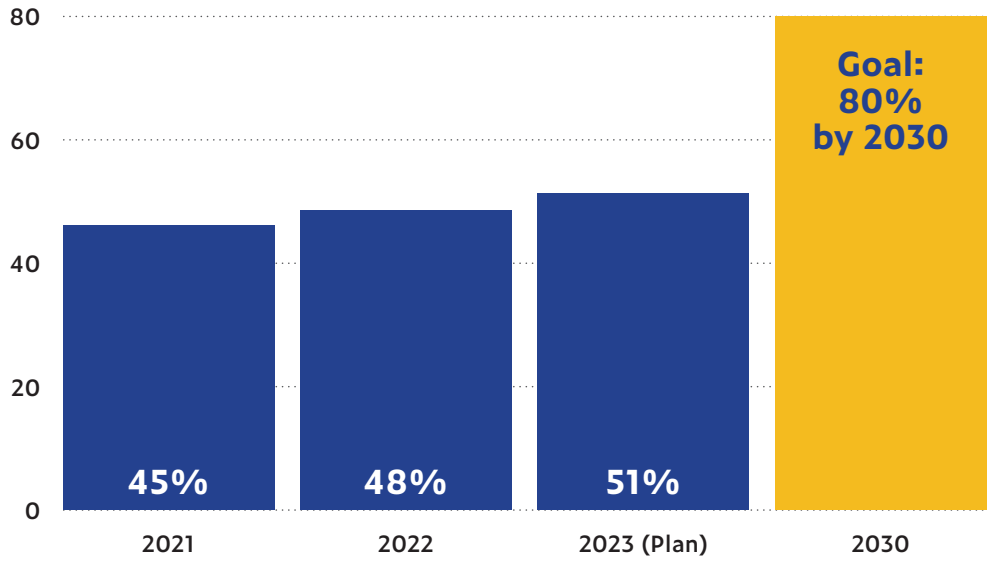
  - Requires the Maine Public Utilities Commission to solicit stakeholder input on whether and, if so, at what cost and under what conditions, an investor-owned transmission and distribution utility may own, have a financial interest in or otherwise control an energy storage system in Maine.

Rooftop Solar at Foxcroft Academy

The installation of 2,000 new solar panels—the largest rooftop solar project in Maine—atop the Jim Robinson Field House at Foxcroft Academy provides numerous benefits. 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 1000 metric tons of CO2 emissions— the equivalent of burning more than 150,000 gallons of gasoline.

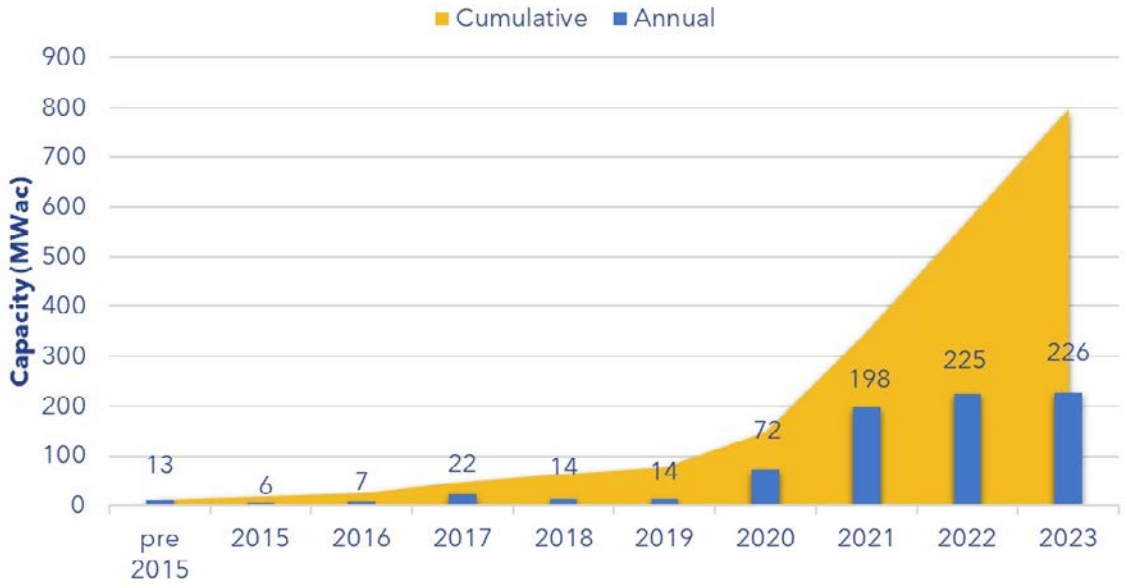
"This solar power system will generate clean electricity for Foxcroft Academy and RSU 68 and serve as an educational tool inspiring young minds to explore the limitless possibilities of green technology," said Arnold Shorey, head of Foxcroft Academy. "Our students will now have the opportunity to witness firsthand the workings of solar panels as they harness the sun's energy and convert it into power."

Maine Renewable Electricity



Source: Maine Govenor's Energy Office

796 Megawatts of Solar is Currently Installed in Maine



Source: Governor's Energy Office. Data from ISO-New England, Central Maine Power, Versant Power, and other sources. Updated September 2023.

Initiate a Stakeholder Process to Transform Maine's Electric Power Sector

Power sector stakeholder process (by 2022)

- The Integrated Grid Planning Process established by L.D. 1959 had its first meeting on February 3, 2023. This process will take place every 5 years and seeks to identify stakeholder priorities, assumptions, methods, goals and tools that electric utilities must include in their grid plans. In 2023, the stakeholder group had three workshops and decided to establish three technical working groups to dive deeper into forecasting assumptions, solutions evaluation criteria, and data availability and collection. The Maine Public Utilities Commission (MPUC) requested comments on stakeholder priorities in August 2023 and is in the process of developing a straw proposal for stakeholder feedback. The GEO expects to reconvene shortly and continue this important process.

- The MPUC issued new rules on Chapter 324 Small Generator Interconnection rules in November 2023 after a year-long information seeking and rulemaking process. These rules adopt national best practices across many interconnection considerations and include energy storage and export capacity provisions for the first time. These interconnection rules will help clarify and streamline interconnection projects, and prevent prohibitive costs for small projects intended to offset on-site load. The Legislature also passed L.D. 327, which will create an Interconnection Working Group and establish an Ombudsperson to help resolve disputes.

Accelerate Emissions Reductions of Industrial Uses and Processes

Launch Industrial Task Force (by 2022)

- Efficiency Maine launched an Energy Efficiency Initiative for Manufacturers using $6 million of Maine Jobs and Recovery Plan (MJRP) funds. The program provides financial incentives to support high-efficiency, clean energy upgrades for businesses in Maine's manufacturing sector.

- The Industrial Task Force was established to promote collaboration, innovation and grant opportunities to support greater energy efficiency in the industrial sector and the reduction of industrial and large business emissions. Since September 2021, the Industrial Innovation Task Force has met quarterly to discuss relevant topics for industrial decarbonization including Efficiency Maine's Commercial and Industrial Custom and Prescriptive Program, Maine's emissions profile, national trends for industrial decarbonization, carbon sequestration, wasted heat and heat recovery, and federal funding opportunities.

Encourage Highly Efficient Combined Heat and Power (CHP) Facilities

Analyze CHP policies

- The 130th Legislature established the Wood-fired Combined Heat and Power Program directing the Maine Public Utilities Commission to procure renewable energy from highly efficient combined heat and power (CHP) projects. The intent of the program was to bolster the state's forest products industry and support the heating and energy needs of the state's industrial facilities.

- In December 2022, the Commission issued an RFP, seeking proposals from qualifying combined heat and power projects for the sale of energy, capacity or renewable energy credits (RECs), however the Commission determined that none of the bid proposals they received met the qualifications of the program. In response to this result, the 131st Legislature modified the Wood-fired Combined Heat and Power Program, broadening eligibility including size, net generating capacity, and location of proposed projects. These changes will be reflected in any future CHP procurements conducted by the Commission under the Wood-fired Combined Heat and Power Program.

Maine Energy Plan: Pathway to 2040

In 2019, Governor Mills signed bipartisan legislation that set a requirement for Maine to use 80 percent renewable energy by 2030, and a target of 100 percent by 2050. This year, Maine will cross the threshold of using more than 50 percent of its electricity from renewable sources.

However, with nearly 60 percent of homes in Maine reliant on heating oil and kerosene for heating, and the New England electricity grid over-reliant on imported natural gas to generate electricity, Maine remains distinctly vulnerable to price shocks from volatile global energy markets, like those that have occurred over the past two years.

Accelerating Maine's usage of 100 percent clean energy to 2040 would support critical energy needs and opportunities for Maine's, including:

- Diversifying sources of energy available to Maine people and reducing reliance on electricity generated by fossil fuels, primarily natural gas;
- Maximizing opportunities for regional coordination as well as clean energy and grid infrastructure investments from the Bipartisan Infrastructure Law and the Inflation Reduction Act;
- Advancing Governor Mills' goal of more than doubling clean energy and energy efficiency jobs in Maine to 30,000 by 2030.

The GEO hosted three public meetings in 2023 to solicit stakeholder input on the plan and intends to deliver a recommended pathway by early 2024.

STRATEGY D
Grow Maine's Clean Energy Economy and Protect Our Natural-Resource Industries

Maine's transition to a clean energy economy will reduce carbon emissions while creating new economic opportunity. Growth in the state's clean energy and energy efficiency sector will require a skilled workforce, creating new career opportunities. Education and training opportunities can help ensure access to these opportunities for all Maine people. For Maine's natural resource industries, adapting to climate impacts—including new markets for Maine seafood, agricultural and forest products—can also offer new economic opportunities and retain and create jobs. Over the past year, State and industry partners have put to work significant funding from the Maine Jobs and Recovery Plan (MJRP) to support natural resource industry processing and facilities, and train the workers needed to achieve Governor Mills' goal of doubling the state's clean energy workforce.

TimberHP Opens in Madison

On July 25, TimberHP marked the successful startup of its first wood fiber construction insulation production line, the first of its kind in North America, at its facility in a former paper mill in Madison, Maine. Wood-fiber insulation is a renewable, high-performing, sustainable building product that reduces greenhouse gas emissions through its ability to store carbon and reduce energy loss in the built environment.

"I believe our strongest motivation in life is to do something that matters," said TimberHP co-founder and CEO Joshua Henry. "And what we're celebrating here today—a renovated mill, making renewable, nontoxic, carbon-storing insulation products—matters. Hiring talented local people—and paying them well to master a new wood products manufacturing process—that matters too. A lot."

Take Advantage of New Market Opportunities

Support Maine's natural resource economies to adapt to climate change impacts

- In 2022, Governor Mills signed legislation establishing the Maine Farmer Drought Relief Grant Program within the Department of Agriculture, Conservation and Forestry (DACF) to support Maine farmers in identifying and accessing new water sources to overcome the adverse effects of drought conditions and climate change. In 2023, in response to the Governor's budget, the Legislature approved $1 million in funding for FY25 to monetize the Fund, and established an ongoing General Fund appropriation of $300,000 beginning in FY25. DACF is currently developing rules for the Fund to launch the program in July 2024.
- In 2022, the Maine Seafood Dealer and Processor COVID-19 Response and Resilience Grant Program (SDPP) committed nearly $16 million in federal funds, including $10 million from the Maine Jobs and Recovery Plan to help seafood dealers and processors in Maine recover from the COVID-19 pandemic.
- Federal funds will support better management of the north Atlantic right whale (NARW) and lobster fishery in the Gulf of Maine by documenting the presence of NARW, developing a risk model based on high quality data on NARW presence and fishing effort, monitoring the ecosystem necessary to support NARW, and developing strategies and technology to minimize any risk.

Grow Maine's forest-products industry through bioproduct innovation

- In October 2023, the Biden-Harris Administration designated Maine's Forest Bioproducts Advanced Manufacturing Tech Hub as a Federal "Tech Hub." The Forest Bioproducts Tech Hub will accelerate research and development of natural polymers and other wood fiber bioproducts that can sequester carbon and replace plastics and toxic chemicals, while bolstering "Made in America" supply chain goals. See Strategy E for more information about Maine's Tech Hub award.

Establish the University of Maine as the coordinating hub for state-applied research on forestry, agriculture, and natural land-related climate concerns

- The University of Maine has launched the Maine Climate Science and Information Exchange (MCSIE) to coordinate climate science in support of *Maine Won't Wait*. MCSIE is developing a database of current climate science research in and about Maine and will 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. (See Strategy E updates for more information about MCSIE.)
- In August 2023, the Northern Border Regional Commission awarded $1 million to the University of Maine's Advanced Structures and Composites Center for a new and immersive manufacturing and education center called the Green Energy & Materials (GEM) Factory of the Future (FoF). The Factory of the Future will be a first-of-its-kind test bed for large format digital flexible manufacturing. The FoF will include specialized spaces for

Investing in Innovative Forest Products

"Our Greenville Biochar manufacturing plant is now in operation making Biochar from Maine's abundant forest residue," said Clean Maine Carbon's President Pat Jones. "These (Jobs Plan) funds allowed Clean Maine Carbon to move forward with their plant which has already resulted in Clean Maine Carbon hiring 4 new employees and Clean Maine Carbon anticipates that trend to continue."

collaboration with industry and government partners, and training of the next-generation manufacturing workforce, including undergraduates, graduate students, and working professionals. The project will break ground in August of 2024.

Increase the amount of food consumed in Maine from state food producers from 10% to 20% by 2025 and 30% by 2030

- The New England State Food System Planners Partnership has launched an effort to establish a baseline for local food consumption in Maine. A state-level report is expected in early 2024. A recent report by the Partnership examined what it would take for 30% of the food consumed in New England to be locally produced by 2030.
- As part of the Environmental Protection Agency (EPA) Climate Pollution Reduction Grants, Maine DEP will be leading an analysis of Maine's waste sector emissions through a Food Loss and Waste assessment, including waste generated in the commercial, residential, and institutional sectors, and an assessment of the current Food Waste Infrastructure and Future Policy Options to improve the recovery of surplus food generation.

Launch the Maine Seafood Business Council by 2022

- The current phase of the SEA Maine project, funded by the US Economic Development Administration (EDA), is about to deliver its final product, an economic development Roadmap, after three years of collaboration between industry sectors (wild-caught fisheries—lobster and groundfish—and aquaculture), NGOs, state agencies, and academic and research institutions. The Roadmap outlines fundable and "shovel ready" goals, objectives, and projects for the marine living resource sector. The top-level strategic goals will be to:
  - Grow the overall value of Maine's marine living resource economy by 10% by 2030.
  - Grow employment within the sector and related value chain by 1,000 employees by 2030.
  - Increase sector-wide financial investments to support infrastructure, available capital, market development, and research and development.
  - Maintain and expand Maine's working waterfront access and the capacity of working waterfront communities to support infrastructure and businesses.
  - Enhance the ability of the sector to respond to challenges and opportunities resulting from climate change and demographic shifts.

Clean energy economy workforce initiative by 2022

Maine had 15,019 clean energy jobs at the end of 2022, up 4.1% from the previous year. These jobs are spread across clean energy and related sectors, including energy efficiency, renewable electric power generation, alternative transportation, grid modernization and storage, and renewable fuels.

- According to the Governor's Energy Office (GEO) 2021 Clean Energy Industry Report, women are relatively underrepresented in clean energy, accounting for roughly a quarter (26%) of Maine's clean energy workforce compared to 52% of the state's overall workforce. However, Maine's clean energy workforce is more representative by race and ethnicity and has a strong representation of veterans (8%) relative to the overall workforce (5%). Maine's clean energy workforce has a higher proportion of Hispanic/Latino, Black, and Asian workers than the state's overall workforce.
- Maine's community colleges have launched several new programs to train professionals in clean energy careers. Southern Maine Community College and Washington County Community College now offer electric vehicle (EV) repair certification courses and a new EV technician training at Kennebec Valley Community College is planned with funding from the Clean Energy Partnership at the Governor's Energy Office (GEO).
- Governor Mills announced Maine's achievement of the first heat pump installation goal at Kennebec Valley Community College (KVCC) in Fairfield, where she unveiled the initial goal in 2019. Following that announcement, the Maine Community College System expanded its heat pump workforce programs, and has trained 558 heat pump technicians to date, including more than 250 at KVCC, which opened an all-new heat pump workforce training lab in early 2021.

Helping Neighbors Save Money on their Energy Bills: Cory Falabella

In December 2022, the Governor's Energy Office awarded $2.5 million in Jobs Plan-funded grants to nine clean energy employers, educational institutions, industry associations, and nonprofit organizations to develop new curricula, provide technical training and experiential learning, deploy new job placement services, and other activities related to workforce development and training. More than 1,800 individuals have received career development or job training assistance as a result of the project.

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 did before him.

But instead of being out working in the weather, Falabella now helps people weatherize their homes in Downeast Maine with Downeast Community Partners, thanks to their Clean Energy Partnership (CEP) program. The CEP initiative pays to train Mainers for in-demand clean energy jobs, and many find employment immediately after completing a certification process.

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

Cory's journey to a certified Energy Auditor and a Quality Control Inspector with Downeast Community Partners started with CEP training listed on Indeed.

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

"They took a chance on me, and I took a chance on them," Cory said. "I tried it and I haven't looked back. I haven't even set any lobster traps this year."

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

"Cory is a quick study with great social skills and has a keen eye for attention to detail. However, it's Cory's empathic accuracy that's played a key role in his success. He was a lobsterman in Downeast Maine and the impact of 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 have an impact on climate change by reducing the 21% of Maine's Residential Carbon Dioxide emissions from heating fuel combustion. 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."

Cory 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 7 certifications and 2 licensing requirements.

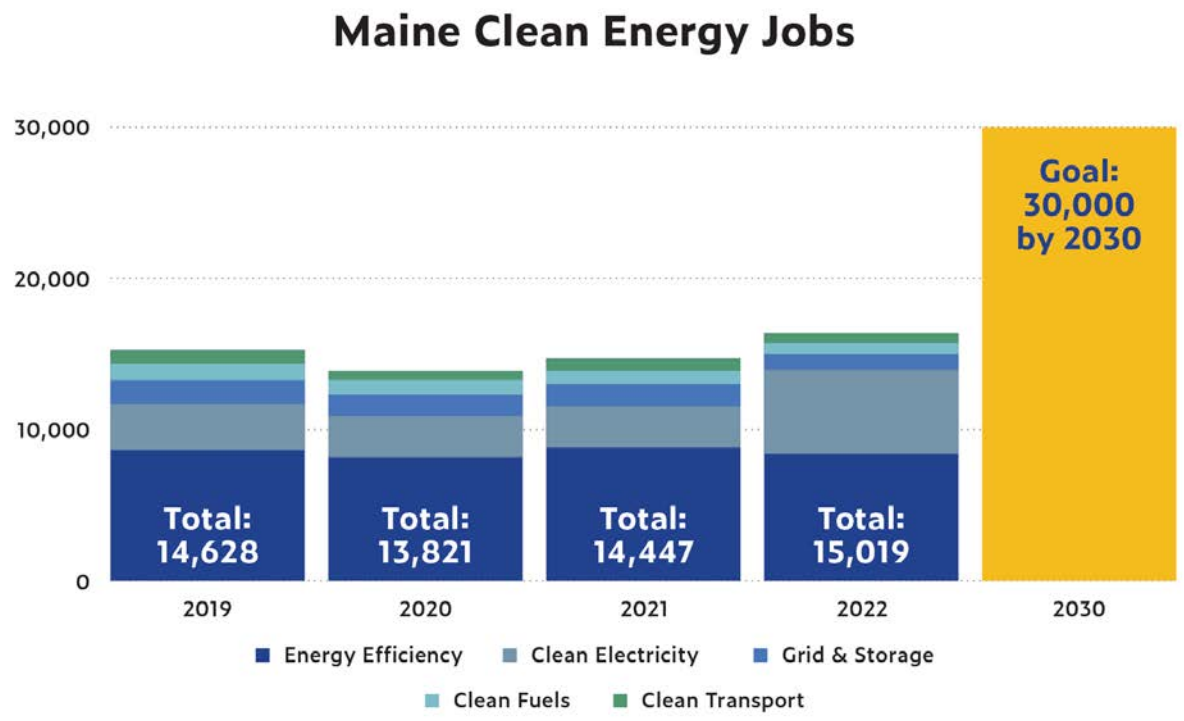
Today, he goes fishing for fun with his daughters, ages 12 and 14. His lobster boat is still in the water, but his job now is focusing on home weatherization, auditing of homes for efficiency, and final inspections, all of which help his clients save money on energy costs.

"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 Cory, it's also bigger than that-- it's also about making sure he's diligent in the work he does and a quality inspection.

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

- In December 2022, the GEO awarded $2.5 million in grants to nine entities to advance clean energy workforce development programming in the state. These initiatives have since reached over 2,000 participants, attracting new workers to the clean energy and energy efficiency workforce, providing career training and upskilling opportunities to existing workers, increasing diversity and representation in the clean energy workforce, and facilitating new and expanded clean energy apprenticeship, pre-apprenticeship, and internship models to facilitate entry into rewarding and high-paying jobs.
  - 2,032 participants served:
    - 319 training, credentialing, and job placement
    - 1,713 education and outreach
  - 30 businesses or community organizations receiving economic assistance
  - 18 new career development or job training programs offered
- The GEO will apply for $1.3 million in formula funds from the State-Based Home Energy Efficiency Contractor Training Grants. This program provides $200 million in grants for States to develop and implement a State program which provides training and education to contractors involved in the installation of home energy efficiency and electrification improvements, including improvements eligible for rebates under a HOMES or HEEHRA rebate program, as defined in Section 50121(d) and 50122(d) of the Inflation Reduction Act, respectively.
- With funding from the Maine Jobs & Recovery Plan and other federal sources, the Maine Department of Labor is investing in apprenticeship and pre-apprenticeship programs to strengthen clean energy career pathways by:
  - Increasing exposure to clean energy careers through pre-apprenticeship programs
  - Creating new pre-apprenticeship programs focused on multi-craft core curriculum for construction & trades
  - Expanding apprenticeship pathways by creating new clean energy sales & customer service apprenticeships



Source: Governor's Energy Office, 2022 US Energy and Employment Report

Clean tech innovation support (by 2022)

- The Governor's Energy Office (GEO) has published a Request for Proposals Proposals (RFP) for Clean Energy Business Incubators, Accelerators, and Support Services. Through this RFP, the GEO seeks proposals for a clean energy incubator, accelerator, or other business support services program that (1) engages with clean energy, energy efficiency, and cleantech businesses and entrepreneurs, (2) strengthens partnerships within Maine's energy sector and entrepreneurial ecosystem, and (3) supports the growth and deployment of clean energy and energy efficiency and cleantech companies, products, and solutions that help achieve Maine's clean energy, economic development, and climate goals. The total amount of funding to be made available through the RFP is $2.25 million.

Shovel-ready Infrastructure Projects (by 2021)

- The Maine Infrastructure Adaptation Fund awarded nearly $20 million in funds to 13 communities around Maine to protect vital infrastructure from effects of climate change. Infrastructure Adaptation Fund recipients will use the funds for projects to address flooding along ocean and riverfronts, protect stormwater and wastewater systems, install culverts to reduce flooding; and ensure energy availability during extreme storms. (The Fund is described more fully in Strategy G.)

- The Maine Department of Marine Resources Bureau of Sea-run Fish, alongside many partners, has identified the St. Croix River as a priority area for improving passage to over 600 miles of historic habitat for all species. Projects to provide fish passage at the two largest barriers has the potential to support tens of millions of adult river herring returns annually, making the St. Croix population the biggest in the United States and Canada. Since June 2022, the Maine Department of Marine Resources has successfully been awarded $5 million from the National Fish and Wildlife Foundation from the America the Beautiful Challenge, in a national competition that was oversubscribed by 12x, and $14.8 million from NOAA's Restoring Fish Passage Through Barrier Removal funding program. Both opportunities were funded through the Bipartisan Infrastructure Law.

Maine Receives Federal Tech Hub Designation

In October, the Biden-Harris Administration designated Maine's Forest Bioproducts Advanced Manufacturing Tech Hub as a Federal "Tech Hub". Businesses like Tanbark Molded Fiber Products in Saco are aiming to help Maine become a global leader in forest-based bio-material production, manufacturing, and innovation.

The designation acknowledges that Maine's forest bioproducts sector has the potential for rapid growth and opens the door for significant Federal investment in the future. The consortium is just one of 31 Tech Hubs to receive an inaugural designation under the Tech Hubs program created by President Biden's CHIPS and Sciences Act.

The Maine Technology Institute (MTI) and the Mills Administration applied for this designation earlier this year. The Forest Bioproducts Tech Hub will accelerate research and development of natural polymers and other wood fiber bioproducts that can sequester carbon and replace plastics and toxic chemicals, while bolstering "Made in America" supply chain goals.

Clean Energy Partnership Updates

Associated General Contractors of Maine launched Construction Immersion pre-apprenticeship programs at Brewer High School, Biddeford Regional Center of Technology, Bath Regional Technical School and Westbrook Regional Vocational School. A total of 50 students completed the program, earning a cumulative total of 213 certificates, and gaining exposure to 13 different construction crafts, including hydroelectric facility maintenance, HVAC, plumbing, and electrical, and concrete foundations.

The Building Performance Association provided training in energy efficiency and weatherization to 80 Mainers in 2023, including classroom instruction in building science and in-field trainings in energy auditing and weatherization. In 2023, BPA also developed local business development and marketing resources for contractors and provided career resources for over 800 job seekers.

Downeast Community Partners trained a cohort of 9 weatherization technicians to perform home repair and weatherization projects in rural Downeast Maine. In partnership with Washington County Community College, DCP has developed a scalable Registered Apprenticeship program combining technical instruction in a classroom setting with on-the-job training. In 2023, trainees received industry certifications and completed 9 weatherization jobs under the supervision of experienced weatherization technicians, including mobile home and stick-built home weatherization projects.

Northeast Energy Efficiency Partnerships established the ReMaine internship program to provide 240-hour paid internship positions with clean energy employers for Maine students and residents. In 2023, the ReMaine internship program placed 26 interns across a variety of clean energy professions, with 57% of interns identifying as female, and 38% of interns identifying as Black, Indigenous, or People of Color. Clean energy internship positions included weatherization technicians, heat pump installers, engineers, building code enforcement support interns, community resilience and energy efficiency interns, and more.

passivhausMAINE delivered 21 builder trainings around the State, from York to Rangely, Houlton, and Machias, focused on advanced building techniques including air sealing strategies, thermal bridge mitigation, and continuous insulation. passivhausMAINE's trainings reached over 250 participants advancing understanding of energy efficient building and retrofitting and the Maine Uniform Building and Energy Code and Stretch Codes.

ReVision Energy provided climate and clean energy education to over 1,200 K-12 students in 2023 via their Tiny Climate Classroom initiative. ReVision's Tiny Climate Classroom includes rooftop solar panels, a heat pump, and battery back-up, and combines a physical clean energy technology learning environment with activities focused on climate topics for student audiences.

The University of Maine hosted 565 students at its Windstorm Challenge event in 2023. The Windstorm Challenge is an engineering design competition for Maine middle and high school students providing an opportunity to design a floating offshore wind hull and test it at the University's Advanced Structures and Composites Center. This annual competition is among several new offshore wind trainings and courses at the University of Maine, including one of the first undergraduate courses on offshore wind farm engineering to be offered in the United States.

STRATEGY E

Protect Maine's Environment and Working Lands and Waters: Promote Natural Climate Solutions and Increase Carbon Sequestration

Climate change and development are harming Maine's natural and working lands and waters, which are key to the state achieving its goal of carbon neutrality by 2045, signed into law by Governor Mills in 2022. Maine is nearly 90% forested, among the most forested states in the country, and there are significant opportunities for ongoing and increased carbon sequestration—including in Maine's working forests and lands as well as "blue carbon" in Maine's coastal waters. Protecting Maine's natural and working lands and waters helps store carbon while supporting our fishing, farming, forestry and outdoor recreation industries and providing important co-benefits, such as clean drinking water, important wildlife habitat, and helping to moderate severe flooding events. Access to lands and waters also has important health benefits and helps Mainers adapt to a changing climate, particularly those who are most vulnerable to climate impacts.

Protect Natural and Working Lands and Waters

Increase by 2030 the total acreage of conserved lands in the state to 30%

- In 2023, the Department of Agriculture, Conservation, and Forestry (DACF) estimates that 4,357,462 acres or 22.2% of Maine's lands are conserved (as of September 2023) through fee or easement instruments.
- DACF's Land for Maine's Future (LMF) program received a historic $40 million biennial budget allocation in FY22/23. Made possible through this funding, the LMF program has closed 11 additional projects in 2023 totaling 13,500 acres. Additionally, LMF has allocated funding for 17 projects in 2023 which once closed would add approximately 24,000 acres to Maine's conserved lands portfolio.
- Maine is currently investing up to $50 million in Maine State Parks through the Maine Jobs and Recovery Plan. These investments include infrastructure upgrades to roads and trails to make them more resilient to climate impacts and making upgrades to support greater access at parks including upgrades for Americans with Disabilities Act (ADA) accessibility, improved water access, and new nature centers.
- Working with longstanding conservation partners, DACF's Bureau of Parks and Lands currently has 7 active land conservation projects underway with funding secured. Projects range in size from under 200 to over 13,000 acres and are located in diverse regions of the state. These projects total over 35,000 acres and will be completed with more than $22 million in federal and state funding, including from the Forest Legacy Program, Land and Water Conservation Fund (LWCF), North American Wetlands Conservation Act (NAWCA), Readiness and Environmental Protection Integration (REPI), Maine Natural Resource Conservation Program (MNRCP), and LMF.

- Access to conserved lands varies depending on where you are in the state. Among Maine's most populous areas, the percent of the population within a ten-minute walk of a park ranges from 93% (Portland) to 56% (Bangor) to 55% (Lewiston) according to the Trust for Public Land. According to the Maine Department of Agriculture, Conservation and Forestry (DACF), the most rural counties have the largest amount of conserved land by acreage and the largest proportion of conserved land relative to total acreage. This pattern is due in part to the large tracts of managed timberland with working conservation easements that are found in many of the more rural counties in the state.

- Screening tools commonly used to identify access of priority populations to green space may be less effective in rural Maine given extremely large census tracts and the presence of large working forests with conservation easements in these areas. Specific low-income or underserved population centers in the Unorganized Territory (UT) may be obscured by very large census tracts, and these populations may not have access to conserved lands due to lack of transportation options, lack of accessible infrastructure on these lands, or other barriers.

- The Maine Department of Inland Fisheries and Wildlife (DIFW) has made it a priority to have ADA accessible boat launches within 10 miles of major population centers. DACF and DIFW have used Census data to identify larger communities that might not be served by ADA-accessible boating opportunities. This analysis led to the recent acquisition of a new boat access site in a gap area (Joy Bay – Gouldsboro) as well as several properties in eastern Aroostook County, a large gap area.

- The Maine Bureau of Parks and Lands (BPL) is working with the University of Maine on a qualitative research project to identify barriers to underrepresented groups participating in outdoor recreation in Maine. The project will recruit individuals from underrepresented populations to a series of focus groups and will help to identify potential solutions to lessen the barriers faced by these groups.

Preserving Access to Green Spaces: Land for Maine's Future

September 2023, Portland officials and residents celebrated the ribbon cutting of the new North Deering which permanently protecting 24 acres of green space including woods, trails, and open fields. Through efforts by the City of Portland, Trust for Public Land and Land for Maine's Future (LMF) it will now be available for use as an outdoor classroom for two nearby schools and is walkable to nearby residents, to ensure access to greenspace for future generations.

In June, Governor Mills announced nine new Land for Maine's Future (LMF) conservation projects, advancing the state's commitment to preserve natural resources, habitat, and ensuring public access to lakes, rivers, scenic views and mountains.
The nine newly approved projects include:

1. Lexington Deer Wintering Area
2. Branch Lake Expansion
3. Haystack Mountain
4. Eastern Trail and Cottontails
5. Maquoit Bay- Sherwood
6. Rumford Community Forest
7. Salmon Falls Tidal Wetland
8. Kezar River South
9. High Peaks Orbeton Keystones

Develop conservation targets for Maine's forest cover, agriculture lands, and coastal areas (2021)

- A subgroup of the Natural and Working Lands Working Group is collaborating to identify targets for Ecological Reserves and old forest, agricultural lands, working forests, and coastal areas. These targets will extend well beyond 2030 and achieving these targets will include strategies additional to fee and easement land protection, such as land use planning, open space tax incentives and other tools.
- Benchmark targets this group will be reviewing include those of the Wildlands and Woodlands, Farmlands and Communities report which calls for at least 70% of New England to be maintained as forest, including at least 10% of the region as old forest or reserves, and an additional 7% of the region to be conserved as working farmland.
- To help inform future conservation targets, the Department of Agriculture, Conservation and Forestry (DACF) in close collaboration with public and private partners reviewed land conservation accomplishments since the 1997 Land Acquisition Priorities Advisory Committee (LAPAC) and identified acquisition gaps which will be used to inform to future acquisition priorities. Results from the LAPAC report are expected in early 2024.

Focus conservation on high biodiversity areas

- The Maine Department of Inland Fisheries and Wildlife (DIFW) conserved nearly 10,000 acres of land in 2023, including its largest ever single land acquisition. These acquisitions include habitat for numerous species of wading birds and waterfowl, wintering deer, wild brook trout, and multiple state and federally protected species. Forty-six percent (4,561 acres) of these acquisitions were located in Focus Areas of Statewide Ecological Significance, which are priority conservation areas with significant biodiversity value.
- Newly acquired DIFW properties were located in 5 different counties, providing expanded public

Accelerating Climate Solutions by Strengthening Connections

In 2023, the Maine Climate Science information Exchange (MCSIE) office at the University of Maine was formed at the request of the Maine Climate Action Plan to coordinate the efficient exchange of climate information and response among scientists. MCSIE includes full-time appointments and co-appointments with sector-based institutions that include UMaine, the Center for Research on Sustainable Forests, and Maine Sea Grant.

A group of "All MCSIE" attendees converged on Deering Hall in Orono last summer for their first monthly staff meeting. Left to right: Dr. Nicole Spaulding, MCSIE Special Projects Coordinator, Ana Trueba, M.S. student in Climate and Quaternary Studies, Dr. Parker Gassett, MCSIE Marine and Coastal Community Specialist, Dr. Ivan Fernandez, MCSIE Director/Professor Emeritus and Climate Research Scientist, Dr. Allison Bistline-East, MCSIE Agriculture and Food systems Specialist, Valerie Watson, MCSIE Forest and Forest Products Specialist, and Dr. Sean Birkel, Assistant Professor and Maine State Climatologist.

MCSIE
MAINE CLIMATE SCIENCE INFORMATION EXCHANGE

access to recreational opportunities across the state. DIFW evaluates potential acquisitions with the goal of providing free public access to suitable hunting, fishing, and trapping locations within one hour of all population hubs, and will continue to seek additional ways to improve equitable access to natural resources for underserved and underrepresented communities.

- The Maine Natural Resource Conservation Program (MNRCP) awarded over $1.5 million for 11 projects across Maine that will restore or enhance over 50 acres of wetlands and help conserve approximately 500 acres of wetlands and associated upland buffer. The projects awarded funding include removal of an abandoned road through a wetland in Atkinson Township; salt marsh enhancement projects in Milbridge and Biddeford; and preservation of high-value wetlands at sites ranging from 7.8 acres to over 175 acres in seven towns in five different Maine counties. Since MNRCP began in 2008, the program has awarded over $26 million for more than 160 restoration and conservation projects.
- A subcommittee of the Maine Climate Council's Natural and Working Lands Working Group is drafting suggested target land protection goals for biodiversity conservation.
- A new map of Focus Areas of Statewide Significance will be rolled out to users at the end of 2023/early 2024. Focus areas are identified by Beginning with Habitat (BwH) partners and biologists from the Maine Natural Areas Program (MNAP), Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources (DMR), U.S. Fish and Wildlife Service (USFWS), The Nature Conservancy (TNC), Maine Audubon, and Maine Coast Heritage Trust (MCHT).

Revise scoring criteria for state conservation funding to incorporate climate goals

- State agencies have upgraded the scoring criteria for state grant programs to require applicants to improve climate resilience (such as hazard mitigation and emergency management, resilience, habitat improvement, public safety, and more) into several state conservation programs. This includes the Lands for Maine's Future Program, as required by statute, and the Maine Outdoor Heritage Fund, both of which prioritize projects that address climate change.
- The MNRCP grant program (see above) is now seeking more wetland restoration and enhancement projects, such as removal of fill material from wetlands or removal of man-made tidal or stream barriers. Projects that protect lands that can accommodate salt marsh migration from sea level rise and that protect important wildlife habitats, such as vernal pools and waterfowl and wading bird habitat, will also be given priority.

America the Beautiful

Grants funding conservation and restoration projects

A $2 million award in 2023 from the U.S. Fish and Wildlife Service and the Bipartisan Infrastructure Law will fund projects along the St. Croix River in Baileyville, Maine to help restore sea-run fish passage. Three 1960's era dams will be modernized to allow fish passage to more than 600 miles of rivers and streams in the St. Croix watershed. This will help with the continued comeback of Alewives.

Develop clean energy siting guidelines (by 2022)

- In 2023, the Legislature passed LD 1881 (P.L. 2023, Chapter 448), granting The Department of Agriculture, Conservation and Forestry (DACF) new permitting authority over certain solar energy development projects. No solar energy development five (5) acres or greater may be constructed wholly or partially on "high-value agricultural land" after September 1, 2024, without a permit from DACF. Individuals must pay a compensation fee or other form of compensation for any portion of development that is located on high-value agricultural land, and mitigation fees will be used to conserve more farmland.
- Pursuant to legislation, the Governor's Energy Office (GEO) convened the Distributed Generation Stakeholder Group to recommend a cost-effective successor program for distributed generation resources. The stakeholder group hosted a land use-focused work session in October 2022, seeking feedback from a broad range of stakeholders. The final report was issued in January 2023 and includes recommendations around siting of renewable energy projects.
- L.D. 1591, passed in 2023, establishes a competitive procurement for renewable energy development located on contaminated land, including agricultural land where the land can no longer be used for agriculture due to the discovery of perfluoroalkyl and polyfluoroalkyl substances (PFAS).
- The GEO completed the Maine Offshore Wind Roadmap, which incorporates strategies related to renewable energy and transmission siting to minimize impacts to existing uses and the environment while maximizing energy and economic benefits (see Strategy C for more information about the Maine Offshore Wind Roadmap).

Develop New Incentives to Increase Carbon Storage

Inventory carbon stocks on land and in coastal areas to provide baseline estimates for state carbon sequestration (by 2023)

- The Department of Environmental Protection (DEP) has released the 2022 biennial greenhouse gas emissions inventory update, which for the first time includes gross and net emissions estimates. The inventory estimates that 75% of 2016 gross greenhouse gas emissions are balanced by sequestration in Maine's environment, including forests and wood products, wetland, agriculture, urban biomass, inland and coastal waters, and soils. An updated inventory is expected in early 2024.
- A 2023 report by the EPA estimated that estimates Maine sequesters 22% of New England's "blue carbon." Most of the carbon stock is in salt marsh, though significant amounts are also found in eelgrass beds and *Phragmites* (common reed).
- DEP's Marine Vegetation Mapping Program (MVMP), which surveys and delineates the distribution of seagrass and tidal marsh habitat, completed its inaugural season in 2023. The program worked in the Midcoast Region in 2023 as part of its 5-year regional rotation of the Maine coast.
- In September 2023, DEP staff submitted revised rule language to enable inclusion of blue carbon stocks and emissions in the upcoming 2024 Biennial Report on Progress Toward Greenhouse Gas Reduction Goals. Rule language updates for salt marshes, seagrasses and macroalgae were informed by members of the Maine Blue Carbon Network (MBCN), a group of agency, academic and non-profit staff that co-authored the Blue

Carbon strategy in the Climate Action Plan. The figures to be used in the 2024 report draw heavily from values presented in a regional blue carbon report by EPA that included contributions from many MBCN members.

- During summer 2023, DEP Marine Unit divers continued monitoring the health of three historically-persistent eelgrass beds in Portland and Falmouth by SCUBA. Since monitoring began in 2018, eelgrass density has declined at all sites, with little tissue remaining in the previously densest areas of the beds as of September 2023. These areas were not subject to similar losses as observed in the northern Casco Bay during 2011–2012.
- The Casco Bay Estuary Partnership (CBEP) continues to regularly convene the Eelgrass Consortium, a group of multiple practitioners and managers with direct interest in monitoring, mapping, restoring and preserving eelgrass in Casco Bay. In 2023, CBEP has also funded a pilot study conducted by Team Zostera, a volunteer group based in Portland, that is documenting seeding phenology of eelgrass in Falmouth and investigating potential partnerships to store eelgrass seeds with the goal of enhancing robustness of eelgrass in areas of loss by manual seeding.

Engage stakeholders to develop a voluntary, incentive-based forest carbon program for woodland owners of 10 to 10,000 acres (by 2022); Financial incentives for climate friendly land management practices; Update the Open Space Current Use Taxation Program and maintain the Tree Growth Tax Law

- The Maine Forest Service (MFS) is working to increase its technical capacity through staff training and contracted assistance to improve analyses and reporting on forest carbon in conjunction with its Forest Resources Assessment program. This will enable the program to develop further analytic tools for modeling and measuring forest carbon and provide useful data on climate impacts and forest carbon for a variety of applications, including the state's carbon budget.
- The increase in technical assistance capacity within the MFS has begun with the hiring of the first of three field forester positions funded through the FY22 budget process, as well as a Senior Planner/Forest Carbon Specialist that will be joining MFS in the near future.

Engage in regional discussions about multi-state carbon programs

- MFS participates in a multi-state project, Securing Northeast Forest Carbon, to advance understanding and application of climate impacts and responses in forestry, as well as understanding of forest carbon accounting and markets.

Expand Outreach to Offer Information and Technical Assistance

Increase technical service provider capacity to deliver data, expert guidance, and support for climate solutions to communities, farmers, loggers, and foresters (by 2024)

- In 2021, the Legislature established the Healthy Soils Program in DACF. In 2023, in response to the Governor's budget, the Legislature approved $1.5 million in funding for FY25 and established an ongoing General Fund appropriation of $500,000 beginning in FY25. DACF is currently developing an online clearinghouse for healthy soils information and technical assistance.
- In 2023, in response to the Governor's budget, the Legislature approved $200,000 in supplemental annual funding from DACF beginning in FY24. This 50-percent increase in funding will allow Conservation Districts to provide more outreach and technical assistance to landowners for soil conservation and climate resilience.
- The Maine Department of Agriculture, Conservation and Forestry (DACF) announced the award of over $3 million from the U.S. Department of Agriculture (USDA) to support urban and community forestry projects and workforce development initiatives. A $1.57 million allocation will fuel a pioneering initiative launched by the Maine Conservation Corps (MCC), enabling the enlisting of five dedicated Community Tree Stewards, who will serve as full-time MCC members over four years. Project Canopy, a DACF Maine Forest Service (MFS) program, is set to

Blue Carbon in Maine: Q & A with Bates College Climate Sciences Professor Beverly Johnson

Maine's coastal environment plays an important role in carbon sequestration. We sat down with Bates College Professor Beverly Johnson to learn more about her research on 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 towards 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 sea grasses or 25% of the overall habitat. We also have the most eel grass of any of the states surveyed, about 34% 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 cm 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 m 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 (CO2 and CH4) 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?

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.

allocate $1.5 million in a competitive subgrant program aimed at municipalities and community organizations. This funding will support the upkeep of public right-of-way and park shade trees, risk mitigation efforts, and replanting initiatives to bolster climate change mitigation and resilience. Key determinants for grant approval will include designations as disadvantaged entities, evidence of pressing needs, proactive urban forest risk planning, community involvement and educational endeavors, and a demonstrated commitment to climate-responsive planning and planting for resilience against pests and storms.

- Additional staffing capacity - via a Climate Coordinator and a Landowner Biologist - at the Department of Inland Fisheries and Wildlife (DIFW) in the Beginning with Habitat program has allowed for increased outreach to landowners, land trusts, and municipalities, and participation in regional and watershed-level climate planning initiatives. Staff have developed and presented climate and resiliency-themed information to towns, land trusts, woodlot owners, and schools; and hosted informational tables at conferences for the Community Resilience Partnership, Maine Municipal Association, and Maine Association of Conservation Commissions. These efforts have helped to advance understanding of the impacts of climate change on Maine's wildlife and habitats, the importance of biodiversity and landscape scale connectivity, and provided direct technical assistance to key user groups (in support of Strategies E.1.2 and E.3.1).
- Beginning with Habitat staff and collaborators are convening Aquatic and Terrestrial Connectivity Task Forces to analyze available data, identify information gaps, and create updated messaging and mapping tools regarding high priority conservation and connectivity needs statewide. Outcomes of this project will aid statewide efforts to identify actionable priorities for improving connectivity and climate resilience of vulnerable species and habitats, and improve useability and accessibility of connectivity data for statewide conservation planning.
- In 2023, DIFW launched its new Environmental Review Resource Map Tool (https://www.maine.gov/ifw/programs-resources/environmental-review/

index.html). The tool provides access to preliminary screening-level information on known habitats and species occurrences relevant to environmental consultations by DIFW, including Endangered, Threatened, and Special Concern species occurrences and habitats, Essential Habitats, Significant Wildlife Habitats, and other important resources. Habitat descriptions are also provided for selected species. This tool is a preliminary screening tool for environmental consultants, developers, and regulatory agencies pursuing potential development activities and regulatory processes and is intended to inform development activities and help to minimize impacts to important resources. It supports but does not replace formal environmental reviews with DIFW.

Launch the Coastal and Marine Information Exchange (by 2024)

- The Maine Climate Science Information Exchange at the University of Maine (MCSIE; more information below) focuses on marine ecosystems and coastal communities as one of its three areas of specialization. MCSIE is developing a database of current climate science research in and about Maine and is engaging with stakeholders to identify information needs.

Enhance Monitoring and Data Collection to Guide Decisions

Establish a "coordinating hub" for key climate change research and monitoring (by 2024)

Create the framework and begin pilot for a coordinated, comprehensive monitoring system (by 2024)

- The Maine Climate Science Information Exchange (MCSIE) is located at the University of Maine and supports climate initiatives state-wide. Since 2022, MCSIE has focused on marine ecosystems and coastal communities. It now has a fully staffed team of specialists covering forests, forest products, agriculture, and food systems. The MCSIE staff offer additional support to Maine's scientific community and decision-makers, facilitating coordination in climate science. As part of the MCSIE programming, staff have developed an online Research Inventory that catalogs current climate science in Maine. This inventory aims to expedite the integration of research and policy-making processes.
- Starting in 2023, The Department of Environmental Protection (DEP) received State General Fund support for its Marine Environmental Monitoring Program (MEMP). Funding will support MEMP lab expenses including ocean acidification (OA) parameters, taxonomy, field support staff, equipment and supplies to assess 12 estuary sites in three estuaries annually with repeated visits to each site from May-October. This monitoring will be carried out on a rotating basis along the Maine coast, and will inform permit program decisions, aquaculture industry needs, designated use attainment determinations and development of new water quality standards for marine waters.
- Maine DEP and the Department of Marine Resources (DMR) are working with academic and nonprofit partners on the Maine Ocean Climate Collaborative to coordinate and improve Maine-focused coastal and ocean acidification monitoring relevant to meeting the goals of *Maine Won't Wait*.
- In August 2023 the International Council for the Exploration of the Sea (ICES) Journal of Marine Science published a paper authored by 23 Maine DMR state agency scientists describing the recent past of coastal Maine fisheries, the Maine DMR programs that study them, and the climate-driven challenges ahead including broad plans to address the recommendations from the strategies outlined by the 2020 Coastal & Marine Working Group.

Incorporate climate research and climate change-related technologies into Maine's research and development priorities

- In October 2023, the Biden-Harris Administration designated Maine's Forest Bioproducts Advanced Manufacturing Tech Hub as a Federal "Tech Hub." The Forest Bioproducts Tech Hub will accelerate research and development of natural polymers and other wood fiber bioproducts that can sequester carbon and replace plastics and toxic chemicals, while bolstering "Made in America" supply chain goals.

STRATEGY F
Build Healthy and Resilient Communities

As Maine works to reduce our greenhouse gas emissions, we must also prepare for climate change impacts that the state is already experiencing, including increased storm events, inland and coastal flooding, and extreme heat. Maine communities are leading the way in understanding, planning and acting to reduce their risk from climate change. The state must continue to increase the coordination of assistance and funding for community resilience, and ensure that the most vulnerable communities can participate.

Community Resilience in Action - Town of Dover-Foxcroft

The Town of Dover-Foxcroft has received two $50,000 Community Action Grants to increase resiliency, promote public health, and increase bike-ped safety. The first grant project will result in an updated town-wide sheltering plan that will determine capacity needs and identify necessary facility upgrades to support warming and cooling centers. In addition, an updated communications system for messaging to residents about shelter availability and accessibility will reduce barrier to entry and increase awareness and use of these centers. This program will reduce the strain on the local hospital and help build community connectedness and preparedness for extreme weather events.

The second grant project is to develop a Complete Streets Redevelopment Plan, which prioritizes the reduction of greenhouse gas emissions and the increased safety of non-motorized transportation through a more efficient transportation system, including more bus stops and new electric vehicle chargers, and the implementation of active-transportation infrastructure, such as the development of green space within the downtown area to provide more walking destinations. Community engagement is at the center of this project – with plans to host several public forums/listening sessions to obtain input from a diverse group of residents and business owners. "We are excited to be working on these projects through the Community Resilience Partnership," says Dover-Foxcroft Town Manager Jack Clukey. "These grants will assist the town in meeting its own local resiliency goals which include enhanced public safety in dealing with extreme weather events and promoting a reduced carbon footprint by facilitating walking, biking and the use of EV's within our community."

Empower Local and Regional Community Resilience Efforts

Provide state leadership for robust technical assistance and funding to communities (by 2024)

- Community Resilience Partnership:
  - In 2023, $3 million per year was allocated in the biennial budget for grants and technical assistance to reduce carbon emissions, transition to clean energy, and become more resilient to climate change effects such as to extreme weather, flooding, rising sea levels, public health impacts, and more.
  - As of October 2023, 175 municipalities and tribal organization are participating in the Partnership, including 133 that are fully enrolled and eligible to receive grants. 30% of Partner communities rank high on the social vulnerability index and 64% have populations less than 4,000.
  - Since inception in fall 2021, the program has awarded $6.1 million to 103 communities statewide plus over $1.2 million awarded to service providers to help communities get started and prioritize projects.
- The Department of Agriculture, Conservation and Forestry (DACF) collaborated with the Governor's Office of Policy Innovation and the Future (GOPIF) to offer Coastal Community Grants (CCGs) on a coordinated timetable with Community Resilience Partnership Community Action Grants. This coordination allows municipalities to propose larger projects that leverage state CRP funds with CCG federally funded through the National Oceanic and Atmospheric Administration (NOAA). CCG proposals that will support shared benefits across diverse populations of Maine people received preference and reduced matching funds requirements. Applicants were encouraged to refer to the Maine Climate Council's vulnerability mapping website, Maine's social vulnerability index, and the U.S. Climate and Economic Justice Screening Tool. Of the six funded CCGs in 2023, two ranked "high" and three ranked "medium" on the Social Vulnerability Index. Additionally, one ranked "disadvantaged" on the Climate and Economic Justice Screening Tool (CEJST), resulting in a match requirement reduction (from 25% to 10%) for two applications.
- The Community Wildfire Defense Grant (CWDG) program, funded by the Bipartisan Infrastructure Law (BIL) and administered by the USDA Forest Service, has made unprecedented funding available for state and local governments, and other entities, to create new Community Wildfire Protection Plans (CWPPs) or to carry out activities from an existing CWPP that is less than 10 years old.
  - In 2023, the Maine Forest Service (MFS), Bureau of Resource Information and Land Use Planning (BRILUP), and Land Use Planning Commission (LUPC) collaborated to submit the following two applications:
    - Katahdin Region CWPP, requesting $141,015 for MFS and partners to create a new CWPP for Millinocket and nearby towns and unorganized territory. If funded, this project would be the largest of its type in Maine in terms of geographic area covered.
    - Southeast Washington County CWPP, requesting $117,236 for MFS and partners to create a new CWPP for six towns and unorganized townships in southeastern Washington County.
  - Additionally, MFS assisted the Town of Phippsburg and Bustins Island with submitting applications. Both locations are Nationally Recognized Firewise USA sites by the National Fire Protection Association.
  - If awarded, these projects would be among the first in the Northeast to receive funds through the CWDG program. Funding decisions will likely be announced in February of 2024.
- In 2023, MFS, BRILUP, and LUPC collaborated to create a new wildfire prevention brochure to be shared with community members across the state.
- In 2022, the University of Maine was awarded a $79,000 grant from NOAA to study mobile home vulnerability along with collaborators in New Hampshire and Vermont. The project will create

a database of mobile home park communities in the three states and convene meetings with representatives of the mobile home park communities to determine climate change impacts in different regions across the Northeast.

Adopt Official Sea-Level Rise Projections

Incorporate official state sea-level rise projections into regulations (by 2022)

- The Scientific and Technical Subcommittee of the Maine Climate Council, prepared the Scientific Assessment of Climate Change and Its Effects in Maine (2020). The assessment included science-based sea level rise projections that were subsequently adopted by the Council in *Maine Won't Wait*. Based on these reports, as requested by the Legislature several state agencies analyzed how to incorporate sea level rise into Maine laws and rules. An interagency report to the legislature was submitted to the Joint Standing Committee on Environment and Natural Resources in January 2022.
- 2021 Public Law, Chapter 590 has implemented agency recommendations from the by amending site location of development laws and solid waste facility laws to authorize the Department to consider the effect of 1.5 feet of relative sea level rise by 2050 and 4 feet of relative sea level rise by 2100 in determining whether this infrastructure fits harmoniously into the existing natural environment. These sea level rise elevations are consistent with the intermediate and high scenarios from the reports by the Maine Climate Council in response to 2019 legislation.
- The Maine Department of Transportation (MaineDOT), acting on behalf of the State of Maine, was awarded a $1 million grant from the U.S. Department of Commerce, to develop a high-resolution, dynamic, and probabilistic model of flood risk along the Maine coast from storm events and projected sea level rise – the Maine Coastal Flood Risk Model (ME-CFRM). The model will take advantage of a new NOAA LiDAR dataset that will provide consistent, high-quality topographic and bathymetric data covering nearly the entire coast of Maine. The LiDAR data is currently being collected and is scheduled to be released by NOAA in late 2023. Final model results ready to be shared with the public by the fall of 2025.

Emphasize Resilience Through Land-Use Planning and Legal Tools

Develop and implement updated land-use regulations, laws, and practices to enhance community resilience to flooding and other climate impacts (by 2024)

- The Maine Department of Environmental Protection (DEP) continues to adopt regulations for climate resilience into several land use regulations and guidance for the protection of ecosystems and to facilitate climate-ready infrastructure investments:
  - In 2023, DEP adopted a new Permit-By-Rule (PBR) section for sand dune restoration or construction and beach nourishment that facilitates planting of native dune vegetation and begins to implement LD 478 by focusing on allowing the use of biodegradable and natural materials in sand dunes for stabilization and restoration. Updated maps referenced in Ch. 355 were also adopted to include all sand dune systems statewide mapped by the Maine Geological Survey. L.D. 1246 amended the Natural Resources Protection Act (NRPA) by adding habitat of species appearing on the official state's endangered and threatened species list to the definition of "significant wildlife habitat," which also requires the Department of Inland Fisheries and Wildlife (DIFW) to define by rule habitat for state endangered and threatened species. Also, Ch. 600 regarding siting of Marine Oil Terminals was revised to include a natural hazard risk assessment and planning standard for coastal flooding and sea level rise as well as requirements for terminal sites to manage stormwater volumes for larger storm events.
  - In 2023, DEP also initiated a stakeholder engagement process in support of upcoming rulemaking for Ch. 500 (Stormwater) that aims to incorporate recommendations

from the Maine Climate Council for climate adaptation and resiliency of stormwater infrastructure.

  - Finally, in 2023, DEP in conjunction with the University of Maine, several state agencies, contractors, municipal and other resilience practitioners, developed preliminary guidance for shoreline stabilization using nature-based design practices that is anticipated to be supported through training events for contractors, municipal representatives, and other interested parties to utilize resilient design practices.

- The Maine DEP and DACF contributed with partners to the final publication and broad distribution of the Community Resilience Workbook, a framework and how to guide for climate change assessment, collective climate action, and achieving community resilience outcomes. DACF, with financial support from The Nature Conservancy, has worked with a contractor on designing a platform to provide online access to the community resilience resources based on the Workbook through engagement statewide with municipalities and resilience practitioners.

- 2022, L.D. 1809, An Act to Allow Exceptions to the Height Limitation under the Shoreland Zoning Laws was passed, allowing certain structures in flood-prone areas to be elevated to meet municipal floodplain management ordinances and still conform with Shoreland Zoning height restrictions.

Strengthen Public-Health Monitoring, Education, and Prevention

Develop and implement more robust public-health monitoring, education, and prevention practices (by 2024)

- The Maine Center for Disease Control & Prevention (Maine CDC) publishes near real-time data on the Maine Tracking Network describing daily and weekly counts of heat- and cold-related illnesses at the state and county levels, and worked with the State Climatologist to display weather data matched to the same time and geographic units as the available health data. Maine CDC also works closely with DEP's Bureau of Air Quality to promote and display their air quality data for ozone and particulate matter on the Maine Tracking Network and communicates extensively with DEP BAQ during the summer to ensure streamlined and consistent messaging when extreme heat events overlap with periods of poor air quality.

- Maine CDC is partnering with MEMA and County Emergency Management Agencies – Sagadahoc and Piscataquis to date – to create county-specific Extreme Temperature Response Plans. These plans will be informed by robust engagement of local stakeholders, and will lay out each county's planned response to an extreme heat or cold event, in the context of the county's larger all-hazards response planning efforts. Maine CDC is also developing an Extreme Temperature Resilience Guidebook and communications campaign for community leaders, town and municipal officials, and affected individuals to respond to extreme temperature events.

Dr. Puthiery Va, New Director of the Maine Center for Disease Control and Prevention

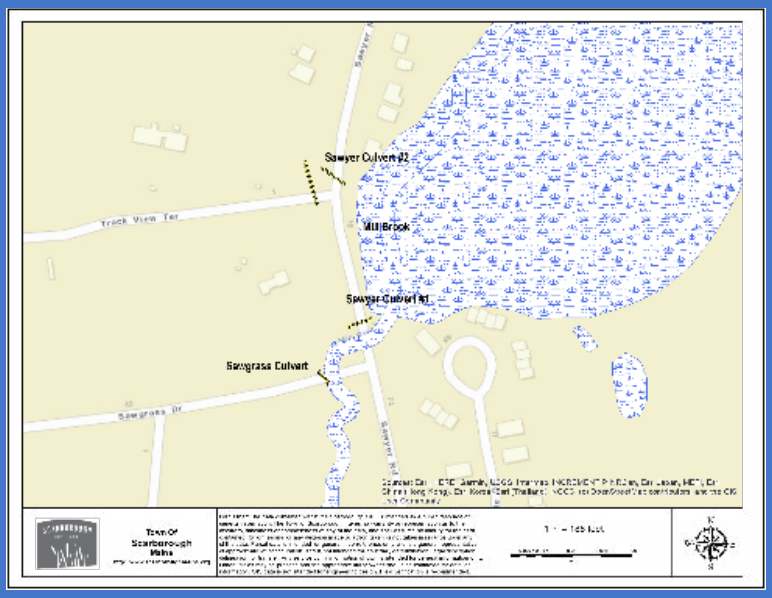
"Maine CDC continues to be focused on the impacts of climate change on the health of communities," said Maine CDC Director Dr. Puthiery Va." "Working with our partners across the administration, we are preparing for and responding to climate events such as extreme weather, flooding, the rise of insect and vector-borne diseases. We're also examining the impact of climate change on the physical, behavioral, and mental health of Maine people. Strengthening and expanding systems of surveillance to respond to climate activity is central to our ability to protect the health of Maine people and communities."

STRATEGY G
Invest in Climate-Ready Infrastructure

Maine's infrastructure is already being impacted by climate change, with 2023 seeing unprecedented and costly damage from extreme weather events across the state. New funding opportunities from the federal Bipartisan Infrastructure Law (BIL) to support resilient infrastructure include programs to strengthen the state's preparedness for storm events, flooding, and wildfires; to build resilience of transportation networks, drinking water and wastewater systems; to mitigate contaminants and pollution; and to improve natural capacity of watersheds and ecosystems. It is critical that the state ensures that all Maine communities are able to access and benefit from these and other resources to support climate-ready infrastructure.

Infrastructure Adapation Fund Update

The Town of Scarborough received $60,000 from the Maine Infrastructure Adaptation Fund (MIAF) in 2022 to develop engineering designs to increase the capacity of two culverts in the Mill Brook watershed and reduce upstream flooding and improve water quality during high-intensity storm events. During high flow events, the constricted flow at these culverts results in flooding upstream at residential properties, causing flooding in their septic systems and resulting in a release of bacteria to nearby water bodies. Over the past year, Scarborough's consultant completed fieldwork and developed preliminary and final plans for the culvert replacements. Based on the extent and cost of the culvert replacement designs, the town is now considering alternative solutions, such as extending the town sewer to service the affected residential properties. This project has been completed and resulted in a shovel-ready resiliency project that can quickly implemented when funding becomes available, as well as new dialogue between the town and sewer district.



Assess Climate Vulnerability and Provide Climate-Ready Design Guidance

Complete a statewide infrastructure vulnerability assessment; develop and implement design standards for resilience in infrastructure projects (by 2023)

- The Governor's Office of Policy Innovation and the Future has just received notice of funding from Federal Emergency Management Agency ($809,000) to 1) conduct a vulnerability assessment of state infrastructure to climate impacts and make recommendations to mitigate risk and 2) develop a climate resilience tool that state agencies and municipalities can use to incorporate climate resilience into the State's capital planning process and grant-making for local capital projects. The assessment will build on the recently completed 2023 Maine State Hazard Mitigation Plan, and will give particular attention to areas of the state where socially vulnerable communities and vulnerable state-owned assets overlap. The vulnerability assessment will make recommendations for agency policy focusing on specific high-risk infrastructure.
- The recently approved 2023 Maine State Hazard Mitigation Plan provides an assessment of risk from natural hazards including climate impacts, as well as strategies to reduce risk. The plan maintains eligibility for millions of dollars in state-allocated disaster recovery and hazard mitigation funding for the State of Maine and over one billion dollars in national competitive funds and is updated every five years, with the next update due in September 2028. The Maine Emergency Management Agency is responsible for completing the update, in collaboration with local governments and county Emergency Management Agencies.
- MaineDOT received a $1 million grant from the U.S. Economic Development Administration to develop a hydrodynamic sea level rise model, with preliminary results expected in spring 2024 (see Strategy F updates for more details).
- The Houlton Band of Maliseet Indians received a $1.6 million planning grant from the National Fish and Wildlife Foundation America the Beautiful Challenge fund to create a portfolio of high-priority river restoration projects that address top habitat needs, while producing safer and cost-effective infrastructure using a robust public-private consortium to support the success of developing this program in a region with extremely high biodiversity value and simultaneously high climate risk. Project will result in a strategic investment plan of shovel-ready and climate-ready projects packaged for rapid application.

Culvert Funding for Climate Resiliency

On August 7, the Biden-Harris Administration announced it has awarded $200 million to 10 states and 14 tribal governments to upgrade culvert systems, as part of BIL's initiative for Drought and Climate Resiliency Projects.

Maine will receive $35 million, the third-highest amount among the ten state awardees, behind just Alaska and Washington state. See the full announcement of the awards here.

These federal funds will be used to upgrade culverts that can block upstream fish passage for culturally important and endangered fish species, and funnel water after heavy downpours in western, central, and Downeast Maine. The Passamaquoddy Tribe will receive nearly $8 million of that for four projects in Washington County.

State Infrastructure Adaptation Fund & Predevelopment Assistance

Launch a State Infrastructure Adaptation Fund and predevelopment assistance program (by 2022)

- Maine experienced four extreme weather events in the past year that merited Presidential Disaster Declarations. This is atypical as Maine averaged one disaster declaration about every two years for much of the previous decade. The four events—Winter Storm Eliot (Dec. 23-24, 2022), the May Day Storm flooding across 8 counties (May 1, 2023), and flash flooding in Oxford County (June 26, 2023) and Franklin County (June 29, 2023)—caused over $15 million in damages across the state. Damage to transportation and energy infrastructure disrupted emergency response, schools, healthcare, and thousands of Mainers' daily lives.

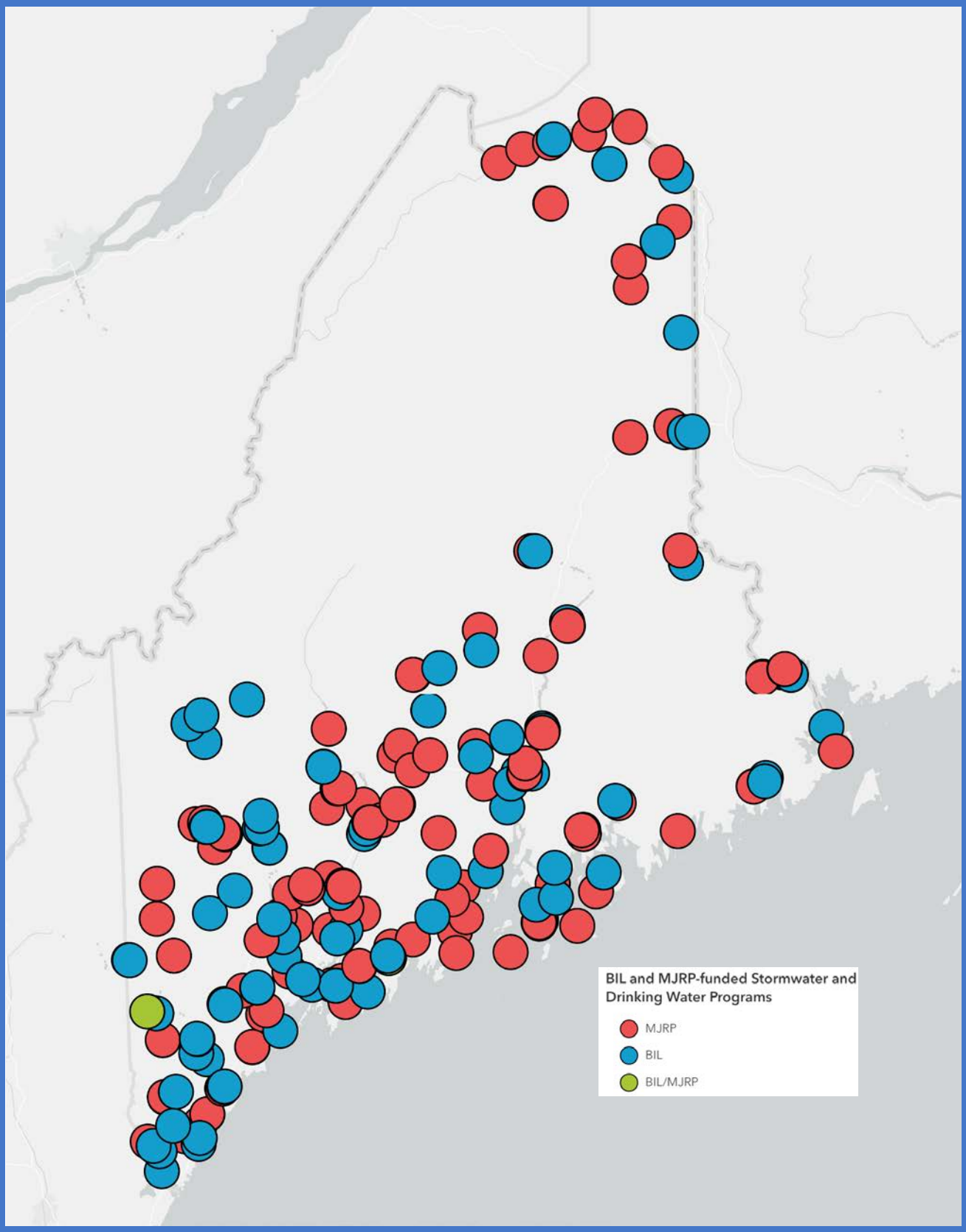
- MaineDOT in 2022 awarded $20 million to 12 communities through the Maine Infrastructure Adaptation Fund (MIAF) to support adaptation and resilience of state and local infrastructure vulnerable to climate change. 74% of awarded funds went to projects in communities with a medium or high Social Vulnerability Index (SVI).

- The 2023-2024 biennial budget includes $7 million in the MIAF for culverts, project development, and cost share grants as well as significant state and federal investments in infrastructure, including wastewater and drinking water programs. MaineDOT will distribute these funds through the Municipal Stream Crossing Program and the Maine Infrastructure Adaptation Fund, which provide competitive grant funding to upgrade municipal culvert infrastructure to improve fish, wildlife habitat, and community safety, and for public entities to adapt their critical infrastructure to reduce vulnerability to climate change, respectively. These programs are scheduled to accept applications this winter. In future fiscal years, these state-allocated funds can also provide match for federal funding opportunities.

- The Municipal Stream Crossing Grant Program at the Maine Department of Environmental Protection (DEP) provides grants that match local funding for the upgrade of culverts at stream crossings on municipal roads. In 2023, the program awarded $4.7 million to thirty-two stream crossing projects from a combination of funding from the Maine Jobs and Recovery Plan and from previously-returned grant funds. Culvert improvements at stream crossings will result in new or improved upstream fish passage to 60 miles of stream habitat, and result in less flooding and improved resilience of local transportation infrastructure.

- In August 2023, the Federal Highway Administration through the Culvert Aquatic Organism Passage (AOP) Program awarded $35.1 million to Maine, the third largest award nationwide, to invest in climate-ready culvert infrastructure. Maine Department of Transportation collaborated with Maine Department of Marine Resources to identify priority clusters of culvert replacement projects that took a watershed approach to improving fish passage, reducing flooding and storm water risk, and increasing the resiliency of essential road infrastructure. Three projects will replace 23 culverts in three strategic locations—the Sandy River, Downeast, and Central Maine. The fourth award is to the Passamaquoddy Tribe at Sipayik in partnership with Maine DMR and three surrounding municipalities to replace four culverts that will improve fish passage, reduce storm water run-off and improve water quality in the Tribe's drinking water supply. In total, the 27 culvert replacements will be $42.4 million, with other federal dollars and state dollars providing the match.

State and Federal Investments in Drinking Water and Stormwater Resilience



This map shows investments in Maine's clean water, drinking water, and stormwater infrastructure using funding from the Maine Jobs and Recovery Plan (MJRP) and the Bilateral Infrastructure Law (BIL). In total, over $188 million is being invested in projects to improve resilience and health outcomes in Maine communities.

STRATEGY H

Engage with Maine People and Communities About Climate Impacts and Program Opportunities

Since the release of *Maine Won't Wait*, communities and people across Maine have led the way on climate action, taking steps to reduce greenhouse gas emissions and increase their resilience to climate impacts. Effective communication about Maine's climate strategies, including about state climate programs and funding opportunities, will help make sure all people and communities in Maine—especially our most vulnerable—can benefit from climate action.

Amara Ifeji, Maine Climate Council Youth Representative

Amara Ifeji is an internationally awarded leader in climate and environmental justice. The barriers she faced in accessing environmental experiences fostered her commitment to securing equitable access to the outdoors for all. In addition to serving as the Youth Representative for the Maine Climate Council, she is the Director of Policy with the Maine Environmental Education Association, where she leverages grassroots advocacy to advance state and federal policy solutions.

"As a student at Bangor High, I led community science initiatives where other students and I monitored the Penobscot River to ensure its health. I noticed that the river's water quality decreased significantly after storm events. Community science was my first outlet for climate action as I tried to understand how Maine's more prevalent storm events impacted my community. However, my classroom education did not reflect the climate concerns I committed to resolving. Therefore, as Youth Representative, I am most excited to center my work in environmental and climate education to enhance learning opportunities for Maine youth so that they can see themselves contributing to climate solutions. I am hopeful for a more climate-resilient and equitable Maine because I have the privilege of working with youth across the state who are leading community initiatives like climate action plans, community awareness campaigns, and climate art, all demonstrating that, as youth, we have a critical perspective on environmental issues that are invaluable to generating solutions."

—Amara Ifeji

Raise Awareness About Climate-Change Impacts and Opportunities

Launch a multifaceted, ongoing communications effort (by 2021)

- Across the state, community-based organizations, local governments, and businesses have followed the lead of Maine Won't Wait to engage with their communities about climate impacts and action strategies. Many of these efforts seek to center the voices of vulnerable populations and to use communication methods that appeal to people from diverse backgrounds. Many towns, cities, and tribes in Maine have local climate action or resilience committees dedicated to educating residents about actions they can take and supporting local government efforts to reduce emissions and improve resiliency.
- MaineWontWait.org is the Maine Climate Council's user-friendly website to promote *Maine Won't Wait* and the climate action strategies. The website includes an action guide, 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.
- The Maine Climate Council maintains a social media presence on Facebook and Instagram aimed at increasing engagement among youth and other people who use social media as a primary communication channel. Recent content has included notices about upcoming Maine Climate Council meetings and profiles on individuals involved with the climate planning process.
- In 2023, the Governor's Office of Policy Innovation and the Future (GOPIF) hired a new Youth Climate Engagement Fellow tasked with conducting outreach to young people in Maine and supporting them to participate in the climate planning process. This work includes building relationships with organizations led by and serving young people, and supporting youth representatives on the Climate Council and Working Groups.

Increase Public Education Offerings Related to Climate and Energy

Develop enhanced educational opportunities for climate science and clean energy careers in Maine public schools; Launch a process to engage key stakeholders in next steps (by 2021)

- In September 2023, the Maine Department of Education (DOE) launched the pilot grant program for climate education established in L.D. 1902 Resolve, To Establish a Pilot Program To Encourage Climate Education in Maine Public Schools ($2 million). The program provides grants to preK-12 schools for professional development in partnership with community-based nonprofit organizations. The program is prioritizing schools that serve communities historically underserved by climate education, serve socioeconomically disadvantaged school districts, and emphasize interdisciplinary, project-based, and place-based learning.
- The Maine Climate Education Hub (maineclimatehub.org), launched in October 2023, is a website that provides Maine educators with free and comprehensive resources to integrate climate change across all grade levels and subjects. The resource was developed by the Maine Environmental Education Association and SubjectToClimate in partnership with a wide range of organizations and teachers throughout the state.

Start the "Maine Climate Corps" for Climate-Related Workforce Development

Launch a Maine Climate Corps program (by 2023)

- The first state-funded Maine Climate Corps program launched in 2023 sponsored by Downeast Community Partners (DCP); DCP Climate Corps members receive extensive training and credentials, conduct energy audits, and provide energy efficiency education for communities in Hancock and Washington counties.
- The first Maine Service Fellow, focused on local climate and energy action, was placed with the Pleasant Point Resilience Citizen Committee serving the Passamaquoddy Pleasant Point Reservation. The Service Fellow piloted the communities'

first Window Dressers build, bringing together volunteers to build over 400 window inserts for the community. The community is now moving forward other efficiency pathways including training six community members to conduct energy audits and install solar grids for community and tribal government buildings.

- The Maine Climate Corps Network (MCCN) was launched with six programs participating (and two pending applications).

Recognize Climate Leadership by Maine Businesses and Organizations

Launch the Governor's Climate Leadership Council (by 2021)

- In December 2022, Governor Mills awarded the first Climate Leader Award to Dirigo Solar, as part of the annual Governor's Award for Business Excellence. The Climate Leader Award recognizes business leadership, innovation, or excellence in mitigating climate risks or developing new technologies to combat climate change.

Youth Representatives

We're pleased to welcome our 12 youth representatives to the Maine Climate Council's planning process.

AMARA IFEJI
Maine Climate Council and Equity Subcommittee

ALYSSA SOUCY
Scientific and Technical Subcommittee

DEB PAREDES
Buildings, Infrastructure and Housing Working Group

MUHAMMED DRAMMEH
Scientific and Technical Subcommittee

KAETHE RICE
Natural and Working Lands Working Group

BETHANY HUMPHREY
Natural and Working Lands Working Group

AUDREY HUFNAGEL
Energy Working Group

MARTIN CARRIERE
Energy Working Group

EDGELYNN VENUTI
Coastal and Marine Working Group

NATALIE JOHNSON
Coastal and Marine Working Group

TAYLOR COLBETH
Transportation Working Group

AINSLEY MORRISON
Resilience Working Group

Jay Students Witness the Effects of Climate Change

At Jay's Spruce Mountain High School, students are putting climate education into practice by competing in Envirothon, an environmental competition program of the National Conservation Foundation. After winning its twelfth state championship in 2023, the all-star team went to work 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, Jay experienced historical damage from some of the worst rainstorms the town has seen. After an estimated five to six inches of rainfall in under three hours, roads were destroyed, culverts were blown out, and driveways were inundated. Months later, the town is still recovering.

Shaken but undeterred, the Spruce Mountain Envirothoners went on to place 16th in the world 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.