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Bass Harbor Head Lighthouse in Tremont, Maine. In 2019, Gov. Janet Mills signed a bill with the goal of installing 100,000 electric heat pumps into homes in Maine by 2025 with the goal of reducing the state's carbon emissions. (Unsplash/Mark Tegethoff)

James Bruggers

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Judy Fahys

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Marianne Lavelle

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Evelyn Nieves

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Sabrina Shankman

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Editor's Note: *This story originally appeared in Inside Climate News and is republished here as part of Covering Climate Now, a global journalism collaboration strengthening coverage of the climate story.*

In Maine, state officials are working to help residents install 100,000 high efficiency heat pumps in their homes, part of a strategy for electrifying the state. In California, an in-demand grant program helps the state's largest industry — agriculture, not technology — to pursue a greener, more sustainable future. Across Appalachia, solar panels are appearing on rooftops of community centers in what used to be coal towns.

The Trump administration may have pulled the United States out of the Paris climate accord, but most states and many rural areas in America have developed their own plans for reducing carbon emissions and moving away from fossil fuels as they maneuver — often aggressively — to address the threat of climate change.

"Even if the U.S. government has decided to leave the Paris Agreement, we see in the U.S. an enormous movement in favor to climate action," United Nations

Secretary General Antonio Guterres said in an interview with Covering Climate Now on Aug. 7. "We see companies, we see cities, we see states, we see the civil society fully mobilized."

Many state and local officials, including those in rural areas, hope stimulus funds aimed at helping rebuild economies ravaged by the Covid-19 pandemic will support renewable energy and other "climate smart" initiatives that cut carbon emissions, while often creating more jobs in emerging industries than traditional infrastructure spending.

The plans for decarbonizing America have been sown and exist like seeds in a parched field, waiting for a drenching rain.

Here are five examples.



In Maine, federal funding 'would make a big difference'

The fingerprints of climate change are all over the state of Maine, from the invasion of temperate species into the rapidly warming Gulf of Maine to summers that are now two weeks longer than they were a century ago. But despite all this change, one thing will stay the same: Winter in Maine will still be cold.

In a state that uses more home heating oil per capita than anywhere in the nation, Maine's climate hawks are looking to make a major change in the way people heat their homes, and help mitigate climate change at the same time.

In 2019, Gov. Janet Mills signed a bill with the goal of installing 100,000 heat pumps into homes in Maine by 2025. This would represent nearly a fifth of the homes in the state.

"It's clearly the electrification strategy," said Hannah Pingree, the state's director of the Governor's Office of Policy Innovation and the Future. "Electrify homes, electrify transportation. That's a strong theme of the Climate Council."

Maine's Climate Council — a group of scientists, industry leaders, local and state officials and residents—is charged with figuring out how Maine will meet a trio of ambitious goals: reducing emissions by 45 percent by 2030 and at least 80 percent by 2050; increasing the state's renewable energy portfolio standard to 80 percent by 2030 and 100 percent by 2050; and making the state carbon neutral by 2045.

Heat pumps — which also cool homes — draw in air from outside and use the difference in temperature between inside and outside air to keep a home comfortable. They are run on electricity, and can be paired with clean energy sources like solar or wind power to eliminate the carbon footprint of home heating.

Mills' plan offers incentives for installing the pumps, thanks to state funding that's being supplemented by some federal low-income housing funds. The program is up and running, but it's something that Pingree said could benefit from an infusion of federal funds.

"The governor's heat pump program is already ambitious and innovative, but to really get to the full scale and take it even further, federal investment would make a big difference," said Pingree, who co-chairs the Climate Council. "Especially when it comes to people's homes, investments in transportation and housing stock, the federal government's participation is extremely helpful and it helps put people to work."

The heat pump program is part of a bigger picture of state and local governments working to get consumers to move away from using fossil fuels for heating. Some local governments in other states are banning natural gas hookups for new construction, and some electric utilities and clean energy advocates are asking California regulators to enact a statewide ban as part of the next update of the state's building code.

Heat pumps are just one part of Maines's strategy, which will likely include a massive expansion of offshore wind and community solar projects and a push to electrify the transportation sector. At a meeting earlier this summer, more than 230 people from six working groups presented ideas to the council — more than 300 actions in all — which are being weighed now.

"If you look at the recommendations from the working groups, one of the cross-cutting ones is finance. We do need to raise revenue, and we also need the federal government to step up," said David Costello, the clean energy director of the Natural Resource Council of Maine. "It's going to be hard for Maine to implement many of the actions that we'd like to implement without increased funding."



A vineyard in Sonoma, California. California has created a suite of "climate smart agriculture" programs. The first-of-their-kind programs, launched in 2014 and expanded in 2017, are helping farms become more resilient to reduce greenhouse gas emissions, conserve land and protect ecosystems and communities. (Unsplash/Trent Erwin)

California's grants for 'climate smart agriculture' are successful — and threatened

To say California farm country is central to its ambitious plans to combat climate change seems redundant. The $50 billion agricultural sector is a pillar of the state's economy, the world's fifth largest, encompassing 70,000 farms and ranches.

With such a vast and vital industry (which includes parts of every county in the state), California has created a suite of "climate smart agriculture" programs. The first-of-their-kind programs, launched in 2014 and expanded in 2017, are helping farms become more resilient to reduce greenhouse gas emissions, conserve land and protect ecosystems and communities.

The programs provide grant funds and technical assistance to farms in four key areas: conserving agricultural land against non-farm development; increasing on-farm water efficiency; improving soil health and managing manure to mitigate its climate impacts. The programs, popular with farmers, are receiving at least twice as many applications as there are grants.

They are also popular with nonprofit environmental and agricultural advocacy organizations. The California Climate and Agriculture Network (CalCAN), evaluated the programs' climate benefits and found impressive results. To date, the programs collectively have funded more than 1,250 climate smart agriculture projects and reduced greenhouse gas emissions by more than 1.1 million metric tons of CO2e (carbon dioxide equivalent) over the life of the projects, the equivalent of removing 67,000 passenger vehicles from the road for a year. The water efficiency programs have saved more than 110,000 acre feet of water (the equivalent of more than 50,000 Olympic-sized swimming pools).

They are also affordable, costing between $43 and $100 per metric ton of CO2 reductions. In a pre-pandemic California, one with a budget surplus and climate

policy priorities, the programs would be expanding. Instead, climate smart agriculture funding is in jeopardy. The state, still partially wracked by the coronavirus, is in a worsening recession. Supporters of climate smart agriculture programs worry the state will spend its funding on other priorities.

This at a time when the coronavirus has exposed the need for greater investment in farm country, said Jeanne Merrill, CalCAN's policy director. "We're seeing the pandemic impacts on farmers is clearly a major disruption," she said, "and it's a disruption that can point to weaknesses in our current system. We're taking the lessons learned from the pandemic and applying that to how we can prepare for greater climate extremes. Investing in resilient farming is key."



Solar panels on a home. A nonprofit based in Berea, Kentucky, the Mountain Association for Community Economic Development, has been working toward reducing the region's reliance on coal. Since May 2015, MACED has helped with 30 solar installations, saving almost $400,000 in energy costs, said Ivy Brashear, MACED's Appalachian transition director. (Unsplash/Vivint Solar)

Across appalachia, a new post-coal economy beckons

Coal mining jobs have been crashing for decades in eastern Kentucky, from roughly 30,000 in 1984 to about 3,000 now, undercutting what has long been among the most impoverished regions of the country.

For a long time, elected leaders held what turned out to be false hope that the coal industry would come back.

But a nonprofit based in Berea, Kentucky, the Mountain Association for Community Economic Development, has been working toward a post-coal economy since 1976.

Among its programs: training entrepreneurs and providing low-interest loans to small businesses. In the past dozen years, MACED added energy efficiency and solar power to its mix of programs, saving clients money and cutting carbon emissions at the same time.

It's an ironic twist that rural Appalachian counties that helped power the nation with cheap — though dirty and climate warming — coal have seen residents' electricity bills skyrocket as coal has given way to cheaper natural gas and increasingly competitive wind and solar. Utility customers have been shouldering the costs of shuttering old coal-burning power plants and cleaning up the toxic messes they leave behind, while the power companies doubled down on more expensive coal.

Since May 2015, MACED has helped with 30 solar installations, saving almost $400,000 in energy costs, said Ivy Brashear, MACED's Appalachian transition director. And since 2008, MACED has helped hundreds of homes and businesses reduce their energy bills by scrutinizing them for errors and helping to pay for energy efficiency retrofits, she said. She added that it included, for example, helping a grocery store stay in business to prevent a rural area from becoming a food desert.

"We listen and collaborate with people who are living and working in these communities, and help advance that new economy in ways that are really just and really equitable," Brashear said.

In solar work, MACED has focused on Letcher County, with a population of about 22,000, where businesses, faith communities and nonprofits are tapping their cultural strengths to create a new economy.

Whitesburg-based Appalshop, the 50-year-old arts and education nonprofit, for example, partnered with MACED to put solar panels on its new outdoor performance pavilion, which opened a year ago, to power its headquarters building and reduce electricity bills.

"In the last decade, our energy costs have gone up by 50 percent and were expected to keep rising," said Alexandra Werner-Winslow, Appalshop communications director. "That was not sustainable."

MACED, she said, "was tremendously helpful with our construction," and with the low-interest loan. At the same time, Appalshop sees solar development and energy efficiency as an important economic engine for eastern Kentucky.

MACED's funding includes grants from government and philanthropic foundations. With Congress weighing further ways to help the nation recover from an economic recession caused by the novel coronavirus, it could further a transition to cleaner energy and energy savings in rural areas through targeted investments and tax rebates, said Peter Hille, president of MACED.

"Anything that can [bring] down the front-end cost makes a big difference since that also reduces interest cost on financing over the life of the loan," he said.



Breckenridge, Colorado is a member of the statewide Colorado Communities for Climate Action and of the national organization, Mountain Towns 2030, that's swapping ideas about how to meet a goal of net-zero carbon emissions within a decade, and one of many tourist towns focused on clean energy long before the coronavirus pandemic. (Unsplash/Alissa Bankowski)

Mountain towns in the west hope for a 'green pathway' stimulus

Jessie Burley is the sustainability director for the town of Breckenridge, Colorado, a posh, outdoorsy community in the Tenmile Range. Not only is Breckenridge a member of the statewide Colorado Communities for Climate Action but the town is also part of a national organization, Mountain Towns 2030, that's swapping ideas about how to meet a goal of net-zero carbon emissions within a decade, and one of many tourist towns focused on clean energy long before the coronavirus pandemic.

And the resulting economic downturn hasn't changed the goal, said Burley. Sustainability-minded communities recognize that jobs and businesses ought to be a focus of the Covid-19 recovery, since the pandemic has revealed how exposed

existing economic systems are, she said.

"Whether it's a virus or whether it's global warming or whether it's some other kind of disaster, we are more susceptible," she said. "We also can't lose sight of the fact that going back to business as usual is not going to be enough."

Members of a Mountain Towns 2030 task force on Covid-19 are pressing for any new stimulus package to include provisions supporting "green pathway" programs, such as green infrastructure, electric vehicle charging or renewable energy jobs. In that spirit, although Breckenridge has suffered steep, pandemic-related revenue losses, a community solar program is pressing forward this year, its grants scaled back from 25 to 20.

Similarly, in Montana, where revenue from natural resource industries makes up 12 percent of the state's general fund and paychecks for 1.2 percent of the workforce, a task force is finalizing a statewide climate change plan this month, said Mark Haggerty, an economist with Bozeman-based Headwaters Economics and a member of the governor's climate task force. Planning is still underway to decarbonize Montana's electricity sector by 2035 and to decarbonize Montana's economy by 2050, he said.

"A lot of this needs to be done in recognition of the fact that [the energy transition] is already happening," said Haggerty, noting that the task force is diverse, including everyone from conservationists to energy officials.

"It is a broad-based challenge, and everyone is affected regardless of where you live or what your political affiliation is," he said of the new climate goals in a world also dealing with Covid-19's economic fallout. "But, also, we need everyone to buy into and ultimately benefit from the changes that we can enact and that will benefit the entire state."



Churchville, Virginia. In the wake of a political upheaval that put Democrats firmly in control of state government, Virginia in 2020 became the first state in the South to commit to 100 percent carbon-free energy and to join the northeast's Regional Greenhouse Gas Initiative. (Unsplash/Scott Pruett)

Virginia is the south's first state to commit to carbon-free energy

In the wake of a political upheaval that put Democrats firmly in control of state government, Virginia in 2020 became the first state in the South to commit to 100 percent carbon-free energy and to join the northeast's Regional Greenhouse Gas Initiative.

Most of the state's coal power would have to shut down by 2024 under the Virginia Clean Economy Act, which also lays the groundwork for a burst of new renewable energy construction. Lawmakers declared large amounts of solar and wind energy

and energy storage to be "in the public interest," sweeping aside the regulatory barriers to new renewable energy projects.

This transition to renewable energy already has a footprint in the Hamptons Roads area, where the state plans to develop a wind industry hub to be overseen by a newly created state agency aimed at fostering offshore wind farms. The bill that created the agency stated Virginia's opposition to offshore drilling.

About 25 miles east, Virginia Beach is considering an array of plans to protect homes and businesses from increased climate-related flooding, storm surges and sea level rise, hoping for either state or federal funds to do everything from buying out flood prone homes to possibly building large floodgates to protect its shoreline.

In Norfolk, the state is supporting construction of new reefs using crushed concrete and granite that can serve as a habitat for the eastern oyster and also help shield the city against storm surges and erosion. The effort enabled state officials last year to declare the Lafayette River fully restored under the Chesapeake Bay Watershed agreement.

The Legislature, meanwhile, considered, but rejected, the idea of a Virginia "Green New Deal" public works-style program. Instead, lawmakers opted for a business-friendly approach that had the support of the state's big utilities, Dominion Energy and Appalachian Power, by the time the legislation was signed into law by Gov. Ralph Northam on April 11.

The new Clean Economy Act makes it easier for rooftop solar to spread across Virginia, by expanding "net metering" for households — giving electricity customers credit for the excess solar energy they produce and sell back to the grid. It enables Virginians for the first time to save money on their monthly electric bills by going solar.

If utilities fall short on their obligations to cut carbon energy and expand renewables, they will be subject to penalties that will go into an account to fund job training, with priority given to historically disadvantaged communities, veterans and individuals in Virginia's coalfield regions. Some critics note that this set-up means there is no assured funding for worker transition programs, which could be provided by stimulus programs from the federal government.

Virginia already has more solar jobs (4,489) than coal jobs (2,730), and the latter are concentrated in the rural southwestern part of the state, a Republican stronghold

which has lost political power to the state's burgeoning northern suburbs. Diverse, highly educated and tech-heavy communities in the northern part of the state helped Democrats take full control of Virginia's Legislature in 2019, paving the way for passage of Northam's clean energy agenda. A chief challenge in implementing the law will be ensuring that the Republican-dominated, fossil fuel-dependent rural regions that have been resistant to change don't get left behind.

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