

# Energy and Climate Planning

*Communities across the state are at varying stages of the process, however it takes more than government action; residents, businesses and nonprofits must play a role.*

Betty Adams

Regional cooperation, citizen involvement and long-term thinking are the keys to planning for energy and climate resiliency.

Communities in northern Maine face challenges from floods, drought, drifting snow and soil erosion; communities in southern Maine view sea level rise and coastal flooding among their main focuses.

Now they are engaged in the process of how to deal with those challenges and others through updates to comprehensive plans, ordinance changes, long-range planning and grant opportunities. And, as with most things, some communities are farther along that continuum.

On Dec. 1, Gov. Janet Mills announced two initiatives “to empower Maine communities to better protect themselves and their residents from the impacts of climate change.” Her speech that day marked the one-year anniversary of the state’s four-year climate plan, *Maine Won’t Wait*. According to a posting on the governor’s official website, one initiative is the Community Resilience Partnership, described as “a \$4.75 million program through the Governor’s Office of Policy Innovation and the Future that will provide grants and technical assistance to municipal and tribal governments to start or enhance their local climate action plans, and undertake community projects to curb carbon emissions, transition to clean energy, and become more resilient to the effects of climate change.”

The other is the Maine Infrastructure Adaptation Fund, “a \$20 million program through the Maine Department of Transportation that will provide grants to municipalities, tribal governments, and others to improve



Galen Weibley

stormwater management, drinking water, and wastewater infrastructure from flooding, rising sea levels, and extreme weather.” That is to start later this year.

Paul Schumacher, executive director of the Southern Maine Planning and Development Commission (SMPDC), noted that Kennebunk, Kennebunkport, Kittery, Ogunquit, Wells and York, have done a lot of work on sea level rise and climate change adaptation.

“We started with those six towns and now with the new opportunities and funding are hoping to expand that program to a region-wide effort,” he said.

A meeting to focus on greenhouse gas emissions hosted by the commission in late December attracted people from nine municipalities. “We have a number of towns with professional staff and managers, but two-thirds of our towns don’t have the time or the human capital to get together on climate change planning at this point,” Schumacher said, noting

that some communities were further along in planning for climate change and resilience.

“There’s a lot of interest in working together and sort of trying to maximize resources and efficiencies,” he said.

A 2020 Sustainability and Coastal Resilience Assessment conducted by SMPDC identified strategies to plan for climate change and resilience in those six York County communities.

“A lot of the impact of climate change is not just on the municipality and municipal infrastructure, it’s also people’s homes and land and our economy,” said Karina Graeter, sustainability coordinator with the commission. She recommends that municipalities take climate change into consideration when updating comprehensive plans, regulations and ordinances.

“Kittery is a good example of why that works,” Graeter said. “They put a coastal resilience chapter into their comprehensive plan update they did in 2015, and since then they’ve used that as basis and motivation for all the great work they’ve done so far in addressing climate change.”

Cameron Wake serves as chair of Kittery’s Climate Adaptation Committee. A resident of the town since 1989, he is also a research professor at the Institute for the Study of Earth, Oceans and Space, and the Department of Earth Sciences at the University of New Hampshire (UNH) and the Josephine A. Lamprey Professor in Climate and Sustainability at the UNH Sustainability Institute.

He noted that the committee, along with Efficiency Maine, hosted a meeting last March with a goal “to make Kittery more resilient in the face of risks associated with warming temperatures and rising seas as well as try to make Kittery more energy efficient and a low carbon community.”

The state’s climate plan glossary

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defines resilience as “[t]he ability of a community, business, or the natural environment to prepare for, withstand, respond to, and recover from a hazardous event.”

Wake said the committee will be looking into both initiatives announced by Mills in December but will be moving immediately on the town’s climate action plan.

Wake summarized the town’s efforts so far, noting it has installed two Level 2 charging stations, leased two electric-powered vehicles, and started composting food scraps at the town’s transfer station.

“It sort of shows the residents’ interest,” he said, “We started with one bin and now have four 67-gallon bins.”

The committee has several outreach efforts. “We’re also engaging the public through a series of displays on energy efficiency and climate adaptation at the Kittery Community Center,” he said.

And with the assistance of students from UNH, the town now has a greenhouse gas inventory of all

## MAPPING KITTERY'S VULNERABILITY TO FLOODING

Kittery's 30 miles of coastline make it a great place to live and work, but also makes it vulnerable to coastal flooding, especially from large coastal storms. The maps depicted here provide a representation of how vulnerable Kittery is to flooding from coastal storms and sea-level rise, now and in the future. Acknowledging this vulnerability is the first step in building a community more resilient to coastal flooding.

Tide gauge measurements in Portland ME show that relative sea level has risen about 8 inches since 1912. There is extensive scientific evidence that indicates anthropogenic climate change (aka global warming) driven by carbon pollution from human activities will cause sea levels to rise for centuries. (1) The rate of sea-level rise depends on how much carbon pollution is emitted in the future from human activities.

The maps of the entire Town of Kittery and the Gate 2 entrance to the Portsmouth Naval Shipyard presented here portray two different sea-level scenarios that result from the combined impacts of sea-level rise and storm surge:

- The 3.9 foot scenario above high astronomical tide (HAT) provides a reasonable estimate of flooding associated with a current 100 year storm.
- The 6.1 foot scenario above high astronomical tide (HAT) provides a reasonable estimate of flooding associated with a 100-year storm in 2050.

### HOW VULNERABLE ARE YOU TO COASTAL FLOODING TODAY OR BY 2050?



**Find your residence, workplace or school on the maps, and add a push-pin to the map to identify that location and find out.**

municipal properties as well as the entire community, identifying areas most vulnerable to coastal flooding, Wake said.

He noted that three bridges over Spruce Creek (carrying Interstate 95, U.S. Route 1 and Route 103) are particularly vulnerable to coastal storms.

“We talked to MaineDOT and the Turnpike Authority and know they’re well aware,” Wake said. “They were good conversations. They said, ‘We’re aware and we’re planning to do construction projects that will make those bridges more resilient.’”

Wake emphasized the importance

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## SEA-LEVEL RISE

A recent scientific study on coastal flood risk (2) indicates that:

By 2050, Kittery is likely (67% probability) to experience sea-level rise of 0.5 to 1.3 feet. There is a 1-in-100 chance that sea-level rise will exceed 2.0 feet by 2050.

By 2100, Kittery is likely to experience sea-level rise of 1.0 to 3.8 feet. There is a 1-in-100 chance that sea-level rise will exceed 5.3 feet.

There is a much larger range in the estimates of sea-level rise after 2050 due to uncertainties in the rate at which the Antarctic ice sheet disintegrates.

## STORM SURGE

Storm surge is the abnormal rise of water generated by a storm. (3)

Recent scientific estimates of the height of storm surge associated with the 100-year storm at the mouth of the Piscataqua River range from about 4.0 to 5.3 feet. (2)

The height of the storm surge will be greatest on the open coast and will be reduced as the surge moves up the river.

Detailed modeling indicates that the height of the storm surge associated with a 100-year storm is reduced by 50% at the Little Bay Bridge. (2)

### Maps prepared by the Kittery Climate Adaptation Committee.

The Committee is charged by the Town Council "to seek options to make Kittery more resilient in the face of risks associated with warming temperatures and rising seas". For more information on the Committee, visit [www.kitteryme.gov/climatecomm](http://www.kitteryme.gov/climatecomm).

### Actual maps represent the work of Alexandra Duprey,

2020 UNH Sustainability Fellow for Kittery and Tufts University's Urban and Environmental Policy and Planning Program Graduate.

Additional flood maps of Kittery are available in Alexandra Duprey's 2020 report - A Town in High Water:

Coastal Hazard Planning Practices for Kittery, Maine, which is available on the Kittery Climate Adaptation Committee web site.

### FOOTNOTES

1. Intergovernmental Panel on Climate Change (2019) <https://www.ipcc.ch/srccl/>  
a. U.S. Fourth National Climate Assessment (2017) <https://science2017.globalchange.gov>
2. New Hampshire Coastal Flood Risk Summary (2019) <https://scholars.unh.edu/ehsc/210/>
3. NOAA Storm Surge Overview <https://www.nhc.noaa.gov/surge/>

of getting residents fully involved in working toward reducing greenhouse gas emissions and addressing climate change. "It is not something local government can do alone," he said. "Government has an important role. Individuals and families have a role to play, businesses and nonprofits have a role. The goal when doing a climate action plan is to get the community involved."

He says that as a climate scientist he wants to say: "All right, people, it's not just about next year, we need systematic change."

About 300 miles north of Kittery, the City of Presque Isle has a number

of energy and climate planning and resiliency programs underway.

Galen Weibley, the city's director of economic and community development, said the city has signed onto a net energy billing program for the Industrial Park solar facility which is on city-owned land. The savings for entering the Net Metering Program is expected to be \$701,574 spread over 20 years, according to figures provided by the city.

Then there's the lease for a solar project that is expected to bring in \$22,246 per year.

"We're reutilizing old brownfield sites right on an airport runway,"

Weibley said. "The FAA really enjoys this project. Its adaptive, creative use, and the rental income from the solar site will be used to support the city's airport and industrial park.

He also noted that the city has streamlined its permitting process for solar sites.

"A lot of our zones allow solar projects as permitted use," Weibley said. "We have four projects pending to be hooked up with Versant Power. They are in the queue with the PUC (Public Utilities Commission) as grandfathered projects." If approved, they intend to start breaking ground in 2022, he said.

This past spring, the city and the Northern Maine Development Commission hosted an Electric Vehicles Symposium via Zoom, which Weibley said was "to continue this important conversation together as a community."

In an article previewing the event, Weibley wrote: "The symposium will be the very first step in a multi-pronged approach to address climate resiliency planning efforts as outlined in the Governor's Office of Policy Innovation and the Future report to encourage climate resilience pilot projects across Maine."

Weibley said it was aimed at educating residents and business owners in northern Maine about electric vehicle technology and ended up as an international symposium that attracted attendees from the Quebec

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Attache's Office. "People from Quebec have to go through Maine if they want to go to other states in New England," Weibley noted.

Attendees also came from Caribou, Castle Hill, Chapman, Fort Fairfield, Fort Kent, Frenchville, and Mapleton as well as Presque Isle.

Presenters included industry folks, people from nonprofit organizations, Efficiency Maine representatives, and a local automobile dealership representative who offered an industry perspective.

"A lot of residents ears' perked up when they heard of electric snowmobiles," Weibley said. "That was kind of

interesting. There's a lot of snow in northern Maine and something fun for them to do as well." However, he added, "Local snowmobile dealers can't get their hands on one for people to test drive. There's a lot of chatter around that." In March 2021, BRP (Bombardier Recreational Products), which is headquartered in Quebec, announced a five-year plan to "offer electric models in each of its product lines by the end of 2026," including snowmobiles.

While folks in Presque Isle might see few electric vehicles traveling around the city now, the Riverside Farmers' Market boasts a Level 2

charger donated by a resident who has a Tesla.

"He moved up from southern Maine and wanted folks to start having that conversation about converting to electric vehicles," Weibley said, adding that the donor told him there were a lot of misconceptions that cold climates are not good for electric vehicles.

The city is monitoring the charger through 2022 to assess its usage.

Weibley, who has held his post for two years, said his interest in opportunities relating to electric vehicles was piqued while he was living in York County, Pennsylvania.

"York County is very close to Maryland, and a lot of Maryland residents moved there and registered their electric vehicles and commuted every day down to Baltimore," he said. "I saw a lot of gas stations (along Interstates 83 and 95) having Tesla EV chargers, and the food establishments had a captive audience sitting there for 45 minutes. I definitely can see this for northern Maine, and they'll need chargers."

And in terms of climate resilience, the city is awaiting estimates on its en-

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ergy savings now that it has renovated the first floor of City Hall, removing window air conditioners and installing heat pumps and new energy efficient windows and new lights. Similar work on the second floor is next.

“It’s a really pretty building,” Weibley said.

The city also has estimated energy savings of \$26,000 per year as a result of converting to LED street lighting.

Jay Kamm, senior planner with the Northern Maine Development Commission, noted that the region was one of three chosen for a pilot project in resiliency planning. In that project, the commission, subcontracting with the Nature Conservancy, helped Caribou, Fort Fairfield and Washburn arrive at a list of top priorities.

They included communications improvements, power outage reduction, water and wastewater management, transportation and fencing improvements, including living fencing (tree planting and soil conservation).

“By necessity those municipalities with public water and sewer really are doing resilience planning because

of increased stormwater and more intense summer storms,” Kamm said. “We tended to have a longer spring thaw in the past. Now we lose almost all our winter snow in a very short amount of time.”

He also said the three communities received a small grant to create wind breaks that would mitigate two problems: soil erosion during the summer and whiteout conditions in winter.

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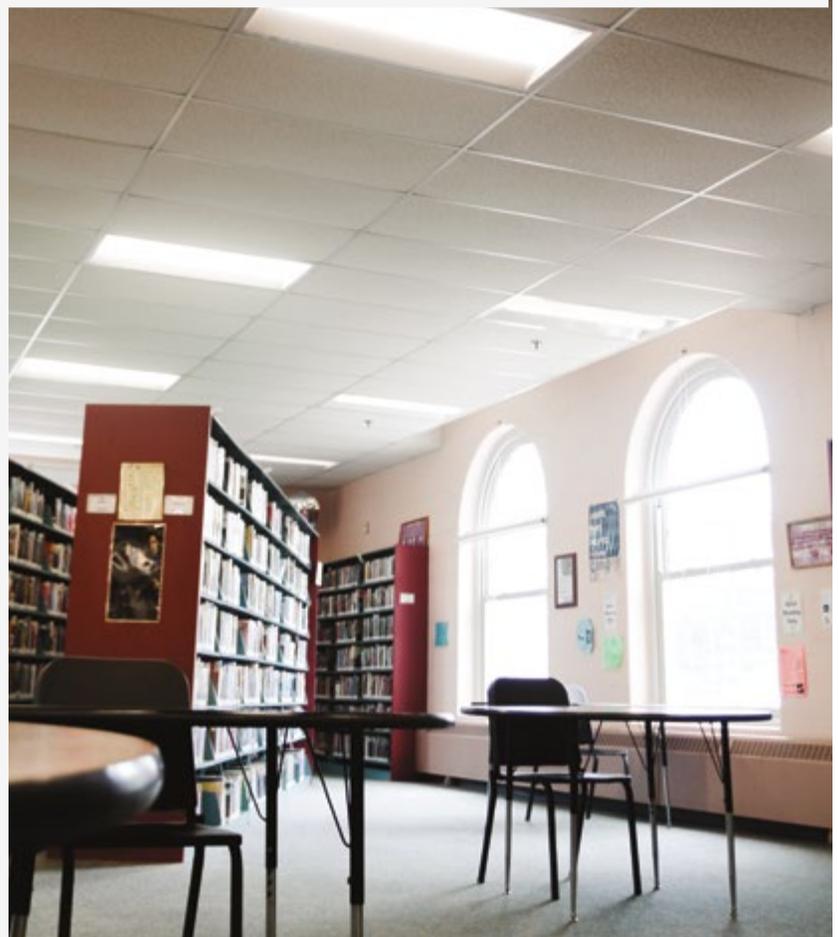
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“One town expends 25-30 percent of the winter budget on non-storm items, just on the wind blowing snow back on the road,” Kamm said, adding that the problem affects “pretty

much anywhere in Aroostook County on roads that go north-south. The road crews can’t keep up at times.”

Kamm said he expects the three communities in the pilot project to

apply for funds through the \$4.75 million Community Resilience Partnership program announced by Mills on Dec. 1, 2021. “We have always said that Aroostook, from a resilience standpoint, never had the pots of money that other communities had,” he said. That program was set to begin in January 2022.

He added that Fort Kent has a couple of electric vehicle charging stations, including one at the hospital and one at the town office, and that Danforth (Washington County), also has one.

“More communities are asking about charging stations and more businesses too,” Kamm said. “We’re starting to see more and more interest from motel/hotels, convenience stores and restaurants.”

In addition, he said, “Our region is looking at biofuels and those kinds of things. Solar is going through the roof here. Everywhere from Houlton north has it or has it proposed.” ■

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