FACTS

MAINE

AMERICAN SECURITY PROJECT

Pay Now, Pay Later: Maine

Climate change threatens the health of Maine's iconic lobster industry, which attracts around $500 million to the state's coastal region.[1]

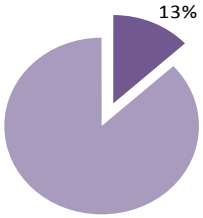
The devastating 2007 Patriots' Day Storm caused around $45 million worth of damage to infrastructure alone.[2] These kinds of storms, now few and far between, could occur every two to three years in the Northeast due to climate change.[3]

Maine could further tap into its vast forest resources to boost its renewable energy use, as it boasts the highest wood/wood waste power generation capacity in the country.[4]

According to a new study, a failure to mitigate the effects of climate change could begin to cause serious gross domestic product and job losses within the next several decades. Between 2010 and 2050, it could cost Maine $300 million in GDP and over 4,000 jobs.*

GDP numbers are based on a 0% discount rate. Job losses are measured in labor years, or entire years of fulltime employment. Backus, George et al., "Assessing the Near-Term Risk of Climate Uncertainty: Interdependencies among the U.S. States," Sandia Report (Sandia National Laboratories, May 2010), 141.* ***https://cfwebprod.sandia.gov/cfdocs/CCIM/docs/Climate_Risk_Assessment.pdf* *(accessed March 23, 2011).*

Maine's Labor Force Projected to be Directly Affected



Source: Maine Department of Labor[9]

Admittedly, the effects of climate change, a complex and intricate phenomenon, are difficult to predict with precision. Informed scientific and economic projections, however, allow us to see that Maine faces significant losses in industries crucial to its economy if no action is taken.

Moreover, data shows Mainers are in a position to benefit from the research, development, and use of renewable energy technologies. For instance, by developing Maine's full wind potential, the state could create enough electricity to power around 8.8 million homes[5]—leaving plenty of electricity for export and industrial needs, as Maine has approximately 500,000 homes.[6] Should we fail to take action against climate change, Maine has much to lose.

Pay Later: The Cost of Inaction

Maine's lengthy coastline is at risk of flooding and storm surge from sea level rise. The sea level is expected to rise by at least one foot by 2100.[7] **Under these circumstances, the effects of a coastal storm would place 260 York County businesses and $41.6 million in wages at risk—assuming that those along Route 1 had not already been flooded and forced to evacuate.**[8]

Changes to the coastline will affect Maine's key industries, including tourism and lobstering. Climate change will also devastate other industries that are dependent on existing ecosystems, such as agriculture and wildlife watching. All told, the environmental shifts due to climate change have the potential to significantly affect around 13% of Maine's workforce.

A Vacationland in Trouble

A popular "vacationland," Maine has a year-round flow of tourists. **In 2006, Maine attracted 10 million overnight trips and 32 million day trips—providing $6.7 billion worth of sales revenue to the state.**[10] This thriving industry provides jobs for around 140,000 Mainers[11] and boasts a variety of outdoor attractions including beaches, golf, skiing, and snowboarding.

Rising waters, temperatures, and increasingly frequent hurricanes put this highly profitable industry at risk and will likely be detrimental to the state and its population as a whole. **Currently rare, incredibly damaging "100-year" coastal storms—like the**

2007 Patriots' Day storm—could instead occur every two to three years in the Northeast. If the six hurricanes that hit the Northeast coast between 1935 and 1960 made landfall today, the region would see $55 billion in damages, not including damage to local ecosystems, recreational activities, and tourism.[12]

Tourism and recreation industries will also suffer as a result of harm to Maine's wildlife population. The approximately 22,254 people employed within the hunting, fishing, and wildlife viewing sectors could face job cuts with a drop in tourism. In 2006, people spent $1.3 billion in these sectors.[13]

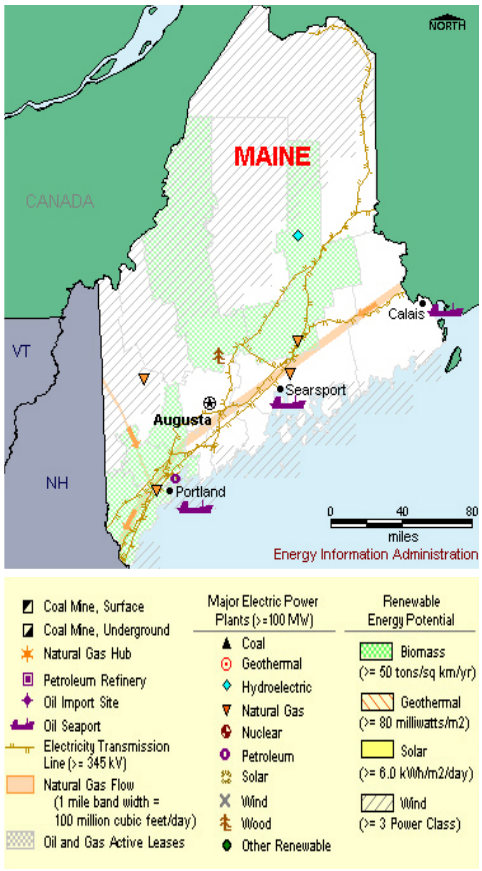
Migrating Woodlands

Maine is home to one of the most abundant and expansive forestlands. Forest covers 90% of the state, 95% of which (17 million acres) is described as "productive timberland."[14] **Thanks to the state's vast resources, the forest-based manufacturing sector alone contributes over $5 billion in revenue and directly employs nearly 20,000 people**.[15] Maine boasts a thriving syrup industry that may be devastated—35-60% of the hardwood forests could be replaced by warmer-climate timber.[16] While most timber is currently hauled over unpaved frozen roads during the winter, a longer mud season with warmer temperatures will increase transport costs.[17]

Stresses for Farmers and Fishermen

Agriculture contributes more than $1 billion to Maine's economy.[18] However, this industry—like other industries dependent on the environment—will face substantial changes due to shifting climate. Two major factors affecting agriculture, temperature and precipitation, will determine the viability of various crops.[19] Some crops may have higher yields while others will decline. For example, temperature increases are expected to decrease potato yields from 25-35%.[20] Many farmers may need to adapt to new, warm weather crops.

More than half of the country's annual lobster catch comes through Maine.[21] Studies have shown that the warmer the water temperature, the more prone lobsters are to disease.[22] Additionally, the change in water temperature is expected to bring new predators to the area, further threatening the lobster population. Due to these shifts, climate change could significantly harm this iconic industry that attracts around $500 million in revenue annually to coastal areas.[23]



Pay Now: The Benefits of Taking Action

Maine has much to gain from increasing its use of renewable resources. Since it has no fossil fuel reserves, it is dependent on imports and vulnerable to fluctuations in supply and price. Maine's substantial potential renewable energy resources—most notably biomass, wind, and hydroelectric—place it in a strong position to limit this dependency. **Renewable resources currently account for nearly half of the state's electricity generation, but Maine could produce more**.[24]

Maine currently makes use of 175 MW of installed wind capacity, enough to power around 240,000 homes.[25] But **by developing Maine's full wind potential, the state could generate enough electricity to power around 8.8 million homes**.[26]

Thanks to its vast forests, Maine enjoys the highest power capacity from wood and wood waste in the country.[27] This resource may be particularly useful in diversifying the state's energy base away from oil dependency. Maine's growing inventory of wood can be used to sustainably convert 45,000 households and small businesses (10% of the state's heating oil users) to wood fuel over the next five to seven years, keeping a portion of the hundreds of billions of dollars spent on importing energy in-state.[28]

By implementing comprehensive legislation on the national level to further develop these renewable resources and limiting greenhouse gas emissions,

Maine's citizens can expect to personally benefit. Maine could add $550-1,317 to the income of each household by 2020, depending on the depth of the legislation.[29]

Laudably, Maine is a signatory to the Regional Greenhouse Gas Initiative (RGGI), a group of Northeastern states which pledge to cap and reduce the amount of carbon its power plants emit 10% by 2018.[30]

Conclusion

Maine must consider action on climate change not just in terms of cost, but in terms of opportunities. If we give Maine's population, businesses, and investors clear and consistent signals by properly offering initiatives and cultivating demand, investment and innovation in renewable technologies will follow.

Maine will have to pay for the effects of climate change. The only remaining question is whether Maine will pay now, or pay later and run the risk of paying significantly more.

(Endnotes)

1 Aaron Smith, "Lobster Prices too Low for Harvesters' Taste," *CNN Money*, March 4, 2010. **http://money.cnn.com/2010/03/04/news/economy/lobster_industry_maine/index.htm** (accessed September 2, 2010).

2 U.S. Geological Survey, *Flood of April 2007 in Southern Maine*, 2009, 1. **http://pubs.usgs.gov/sir/2009/5102/includes/sir2009-5102.pdf** (accessed September 2, 2010).

3 Ibid., 23.

4 U.S. Energy Information Administration, *State Energy Profiles: Maine*, April 2010. **http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=ME** (accessed September 2, 2010); Burning wood for fuel is a centuries old practice, currently making up 2% of American total energy use. While wood pellet combustion does release carbon monoxide and other particulates, sometimes producing acid rain, it is still superior to the burning of fossil fuel, and clean-burning technology is available. Burning wood waste also saves companies money they would otherwise have to spend on purchasing electricity. U.S. Energy Information Administration, *Renewable Biomass*. **http://www.eia.doe.gov/kids/energy.cfm?page=biomass_home-basics** (accessed September 23, 2010).

5 Repower America, *Maine*. **http://www.repoweramerica.org/in-your-state/maine/** (accessed September 2, 2010).

6 Year 2000 statistics available from U.S. Census Bureau, *Maine*, April 22, 2010. **http://quickfacts.census.gov/qfd/states/23000.html** (accessed September 2, 2010).

7 G. L. Jacobson et al., *Maine's Climate Future: An Initial Assessment*, University of Maine, 2009, 21. **http://climatechange.umaine.edu/files/Maines_Climate_Future.pdf** (accessed September 14, 2010).

8 Ibid., 22.

9 Included are those employed by the agriculture, forestry, and forestry product sectors, as well as leisure and hospitality workers. Maine Department of Labor, *Employment and Wages by Major Industry Division: 2009*. **http://www.maine.gov/labor/lmis/data/qcew/QCEW-Maine-2009.xls** (accessed September 28, 2010).

10 Jacobson et al., 50.

11 Ibid.

12 Ibid., 22.

13 National Wildlife Foundation, *Global Warming and Maine*, January 2009, 2. **http://cf.nwf.org/globalwarming/pdfs/maine.pdf** (accessed September 9, 2010).

14 Jacobson et al., 46.

15 Ibid., 45.

16 National Wildlife Foundation, 2.

17 Jacobson et al., 3-4.

18 Ibid., 41.

19 Ibid.

20 Ibid., 42.

21 Ibid., 20.

22 National Wildlife Foundation, 2.

23 Smith.

24 U.S. Energy Information Administration.

25 Repower America.

26 Ibid.

27 Ibid.

28 The Governor's Wood-to-Energy Task Force, *The Governor's Wood-to-Energy Task Force Report*, September 2008, 4, 18. **http://www.maine.gov/doc/initiatives/wood_to_energy/documents/WoodtoEnergyTaskForceReport.pdf** (accessed September 9, 2010).

29 David Roland-Holst and Fredrich Kahrl, *Clean Energy and Climate Policy for US Growth and Job Creation*, Berkeley College of Natural Resources, University of California, October 25, 2009, 3-4. **http://are.berkeley.edu/~dwrh/CERES_Web/Docs/ES_DRHFK091025.pdf** (accessed September 9, 2010).

30 Regional Greenhouse Gas Initiative, *Fact Sheet: The Regional Greenhouse Gas Initiative*, 1-2. **http://www.rggi.org/docs/RGGI_Fact_Sheet.pdf** (accessed January 25, 2011).