

FACTS MARYLAND

A M E R I C A N S E C U R I T Y P R O J E C T

Pay Now, Pay Later: Maryland

Between now and 2018, a decrease of only 1% at the Port of Baltimore in shipping activity will cause indirect economic costs of about \$361 million to Maryland's gross state product (GSP) and over 3,600 jobs.¹

Maryland tourism contributed more than \$11 billion to the state's economy in 2007—but with coastal and wildlife losses, this industry likely will suffer.²

Maryland could see \$485 million in new capital investment, \$437 million for farmers and rural landowners, and \$8 million in additional local tax revenues, if a national renewable electricity standard requires carbon emissions to be cut by 20% by 2020.³

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 Maryland \$23.7 billion in GDP and 163,000 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).*

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

Moreover, data shows Maryland is poised to benefit from the research, development, and distribution of renewable energy technologies. Offshore wind farms and development of solar and biomass technologies have the potential to cut Maryland's carbon emissions while creating green jobs in the state. Should we fail to take action against climate change, Marylanders have much to lose.

Pay Later: The Cost of Inaction

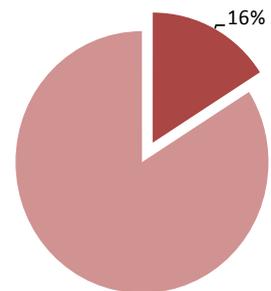
Maryland has nearly 3,200 miles of coastline,⁴ which is becoming increasingly vulnerable to rising water levels.⁵ The sea level along Maryland's coast is rising at a rate of 3-4 mm (0.14 inches) annually, almost twice the global average (2 mm). **The Chesapeake Bay has warmed by 2°F⁶ and in many places has risen one foot since 1900,** which has already caused a myriad of effects on the ecosystem and industries supported by the Chesapeake. A direct effect of these rising water levels is the inundation of the coastal marshes and many small islands in the bay.⁷

A Perfect Storm

Severe storms, projected to increase in frequency and severity with climate

change, are already on the rise in the Atlantic.⁸ Hurricane Isabel cost \$462 million in damage and caused six to eight foot swells in Baltimore and Annapolis—and future hurricanes will likely be more costly due to their increased severity and the dwindling offshore barrier islands that help dissipate storm surges before they hit the mainland.⁹ Many of the coastal marshes and beaches have already been inundated: at least 13 Chesapeake Bay islands have disappeared underwater in the last hundred years, with many more in the Bay and farther offshore likely to face the same fate.¹⁰

Maryland Labor Force Projected to be Directly Affected



Source: Bureau of Economic Analysis¹¹

Insurance premiums have already begun to rise with the increase in severe weather. **Greater Baltimore-Washington insurers incurred \$25 million in costs as a result of flooding in June 2006.** The finance and insurance sector employs 4.2% of

the state's population and accounts for \$8.5 billion in wages annually; these numbers are likely to be impacted as the insurance industry is affected by climate change—by 2080, insurers will have to increase their capital requirements by an estimated 90% just to cover hurricane damage.¹²

Wildlife and Communities on the Chesapeake Bay

In 2007, tourism in Maryland generated \$13.6 billion for the state in spending and supported over 141,000 jobs.¹³ Much of this revenue comes from visits to coastal towns and their beaches. With increases in sea level and further coastal erosion, some of these tourist hotspots could soon be dead zones. Ocean City spent \$30 million in the 1980s in an effort to maintain its eroded beaches. **The Environmental Protection Agency predicts that a 20-inch rise in water levels could cost Maryland \$35-200 million to replenish its beaches by the end of the century.**¹⁴

Destruction of Maryland's unique ecosystems—which include shorebird nesting sites and fish nurseries—by **rising sea levels will discourage out-of-state wildlife viewers (who numbered over 165,000 in 2006)¹⁵ and threaten tourism revenue.** The Chesapeake Bay has been an important site for waterfowl to winter, but rising water levels have increased the salt content of the marshes, making the bay a less attractive ground for the birds. This increase in saltwater could also cause coastal plants to die off, further changing the distinctive makeup of the Chesapeake.¹⁶ Indeed, a 21% reduction in Maryland's wetlands is also predicted by the end of the century.¹⁷

Crab and crab cakes have long been a staple in Maryland and a must-have for any visitor to the state. But crab populations will also be affected by changes in salinity. **Fishing and crabbing in Maryland are responsible for over \$207 million annually.**¹⁸ **The value of annual harvests of soft shell blue crabs from Maryland and Virginia, however, has decreased by 41% since the late 1990s,** reducing the take-home pay for the watermen that harvest them. In 2008, a state of disaster was declared when the population of the blue crab fell significantly. Emergency regulations included placing a limit on the harvest of females.¹⁹ Though many of the state's industries generate much more than the fishing and crabbing sector, significant damage to this iconic industry would be a major loss for Maryland's traditions and cultures.

The Port of Baltimore, on the Chesapeake Bay, contributes over \$1.98 billion to the state's economy annually and employs 127,000 Marylanders. The port regularly dredges to remove excess sediment (which is generated by river runoff and bay currents) from the bottom of the bay to keep its shipping lanes open. A surge in upstream flooding from spring and summer storms will increase sediment deposits and pollution—and raise the financial and environmental costs of dredging operations. Without dredging, ships may not be able to navigate to the port through the shallower waters. **A 1% drop in shipping activity by 2018 at the Port of Baltimore would indirectly cause losses to the GSP of about \$361 million and over 3,600 jobs.**²⁰

An Agrarian Nightmare

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2009, largely from the sale of broilers, plants and flowers, corn, dairy products, and soybeans. **Over 30% of the state's land is dedicated to agriculture.**²¹ Maryland is predicted to increasingly receive more precipitation throughout the fall, winter, and spring—but in the form of severe storms rather than the precipitation crops and farmers require. Warmer temperatures will lengthen the growing season, but more frequent and severe summer droughts could ultimately lead to agricultural losses. A drought during the 1998-1999 growing season, for example, caused the loss of over \$800 million in crops in the mid-Atlantic region. Increased temperatures also are likely to produce an uptick in invasive species and pests. In 2002, Maryland farmers spent \$39 million on pesticides. As weeds and insects proliferate at a faster rate and spread north, this cost is likely to increase.²²

Forestry is Maryland's 5th largest industry—western Maryland's number one source of income. It provides 18,000 jobs and generates nearly \$2.5 billion yearly. **A 1% decrease in harvestable trees by 2018 would result in a loss of over 1,500 jobs and \$236 million from Maryland's GSP.**²³

Pay Now: The Benefits of Taking Action

In April 2008, Maryland enacted regulations requiring the state to generate 20% of its energy from renewable sources by 2022.²⁴ The state has also pledged to cut emissions by 25% by 2020.²⁵ These two pieces of legislation have solidified Maryland's position as a leader in the fight against climate change. The state is also a signatory to the Regional Greenhouse Gas Initiative (RGGI), a group of states which pledges to cap and reduce the amount of carbon its power plants emit 10% by 2018.²⁶

Consumers throughout Maryland could—with the implementation of a national standard requiring states by 2020 to generate 20% of their electricity from renewables—see a reduction in their electricity and natural gas²⁷ bills, as a result of a diversified electricity portfolio that includes wind, solar, and biomass sources. **Savings could reach \$60 million by 2020 and \$340 million by 2030. In 2030, \$120 million of savings could benefit households,²⁸ translating to a savings of over \$60 per household.²⁹** Furthermore, Maryland could create almost 1,000 new jobs from developing renewable energy, and receive new capital investment totaling \$485 million and additional local tax revenues totaling \$8 million.³⁰

Offshore wind farms have the potential to power much of the state; **installing an estimated 2,900 offshore turbines would help ensure the state meets its 2022 goal.³¹** Maryland also has significant potential for biomass energy. Nearly 3 million tons of biomass are produced annually in Maryland, and there are many research facilities throughout the state that are developing new technologies for its use.

Increased investment in biomass could reduce landfill waste (which releases its own greenhouse gases).³²

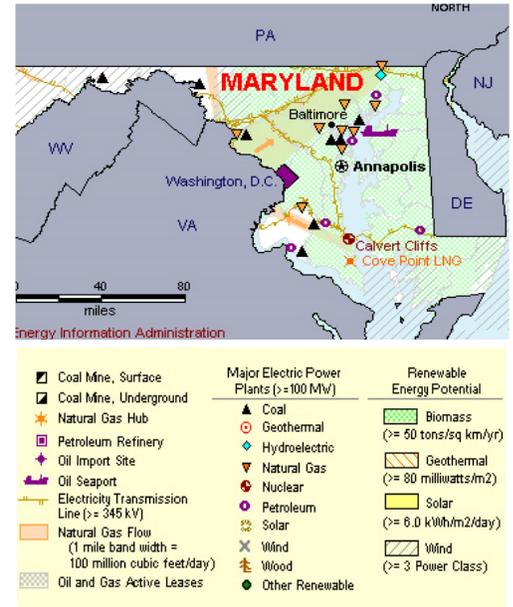
On an average sunny day during the summer, Maryland receives approximately 196,000 gigawatt hours of solar energy—more power than the state's electric power plants produce in a year.³³ Dedicating one square mile to solar power could thus power 1,100 homes.³⁴

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The state government also offers many incentives and grants in an effort to ensure Marylanders are making use of the state's solar potential.³⁵ These incentives include net metering programs, which allow customers to carry over the value of excess energy generated toward their next bill;³⁶ a property tax exemption for solar power generated on an individual's property;³⁷ and, grants offering up to \$10,000 in accrued benefits from installing a solar energy system.³⁸ On the whole, Maryland is already beginning to benefit from green energy incentives and investments, and many solar energy companies have established headquarters there.³⁹

As of 2007, Maryland had 12,900 clean energy jobs at more than



1,000 clean energy businesses. The state ranks 6th in renewable energy venture capital investments, garnering \$324 million from 2006-2008.⁴⁰ In addition to the vast potential for revenue generation and savings from investment in wind, solar, and biomass energy, Maryland has much to gain from manufacturing items necessary for clean power generation and disbursement. Much of the investment and capital flow will involve manufacturing, installing, and maintaining renewable energy technologies. A 20% national standard could create long-term jobs in manufacturing for wind turbines, solar photovoltaic panels, biomass facilities, and geothermal power plants.⁴¹

Conclusion

Maryland must consider action on climate change not just in terms of cost, but also in terms of opportunities. If we give Maryland's population, businesses and investors clear and consis-

tent signals by properly offering initiatives and cultivating demand, investment, and innovation in renewable technologies will follow.

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

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