



FACTS OKLAHOMA

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: Oklahoma

Oklahoma, the nation's third largest producer of wheat,¹ could see a decline in wheat yields by 27-37% as temperatures increase beyond wheat's standard temperature range.²

Oklahoma is likely to experience more droughts, which promise to be costly. For instance, the severe 1998 drought was estimated to cost the state around \$2 billion.³

Thanks to its unique geography and environment, Oklahoma has the potential to produce 9% of the entire country's electricity needs via wind energy.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 Oklahoma \$38 billion in GDP and over 312,000 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/cfidocs/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, however, as we have used in our research, allow us to see that Oklahoma faces significant losses to its economy if no action is taken.

Moreover, data shows Oklahoma is poised to benefit from the research, development, and distribution of renewable energy technologies. Thanks to its unique geography, Oklahoma has sufficient resources to produce 17 times the state's annual electricity needs.⁵ Should we fail to take action against climate change, Oklahoma has much to lose.

Pay Later: The Cost of Inaction

Climate change is expected to produce warmer, drier summers in the state and increase the frequency of high intensity weather events such as droughts. Due to these changes, Oklahoma will find it increasingly difficult to sufficiently access an already limited freshwater supply. These changes will also decrease livestock and crop yield, negatively affecting Oklahoma's important agricultural industry. Home to one of the most inland ocean-going ports in the nation, the Port of Tulsa,⁶ lower water levels will likely threaten Oklahoma's income generated through water transportation. Lower water levels are projected to create delays and increase costs to industries that rely on water transport.

Data shows Oklahoma is poised to benefit from the research, development, and distribution of renewable energy technologies. Thanks to its unique geography, Oklahoma has sufficient resources to produce 17 times the state's annual electricity needs. Should we fail to take action against climate change, Oklahoma has much to lose.

An Agrarian History under Stress

With around 75% of its area dedicated to farmland, Oklahoma depends heavily on access to freshwater.⁷ However, current water use is unsustainable since the groundwater supply, notably in the High Plains aquifer, is tapped faster than it can replenish. The aquifer's water levels have fallen an average of 13 feet since 1950, while some of the most heavily irrigated areas have dropped between 100 feet and more than 250 feet.⁸ **At present, the states drawing from its reserves are draining the High Plains aquifer at an annual volume equal to 18 Colorado Rivers.**⁹ Longer periods of drought and quicker evaporation rates due to rising temperatures will speed its depletion and further tax an already shrinking supply of necessary freshwater in the state.

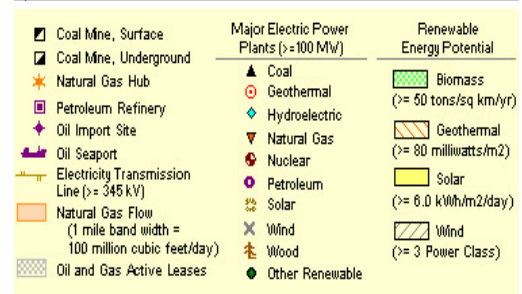
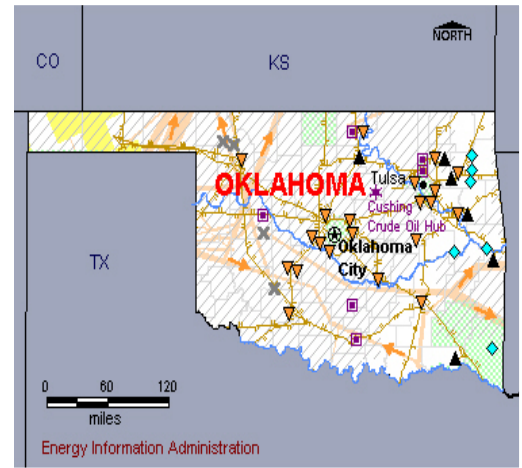
Oklahoma is the 3rd largest wheat producer and 5th largest cattle producer in the nation. The state also boasts one of the highest poultry and swine production rates in the country. In addition, Oklahoma's thriving commercial timber production contributes more than \$1.5 billion annually to the economy.¹⁰ All of these industries are naturally sensitive to climate shifts and stand to suffer from climate change. Producing certain crops will be unsustainable at higher temperatures. For example, Oklahoma's wheat crop may decline by 27-37% from rising temperatures.¹¹ Crops will be further threatened by a greater number of insects and new pests sustained by the higher temperatures and the earlier arrival of spring.¹²

Among other negative climate factors to affect these industries, the Oklahoma Climatological Survey has predicted that earlier maturation of various crops will increase their vulnerability to late freezes, and a greater risk of wildfires arises from drier and warmer environmental conditions.¹³ Although climate predictions call for longer rain-free periods, rainfall is expected to be more intense when it does occur—and is likely to increase contamination and erosion due to water runoff from agricultural, mining, oil, and natural gas exploration areas that contain fertilizers and other pollutants.¹⁴

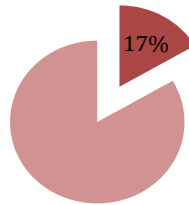
Oklahoma's cattle industry will also be negatively affected, as increased heat and humidity will reduce the animals' ability to gain weight, reproduce, and produce milk. Should temperatures rise 9-11°F (as upper-range temperature predictions indicate) Oklahoma is projected to face a 10% decline in livestock yields.¹⁵

Harm to Transporters and Manufacturers

Drier conditions leading to droughts also have the potential to impair water traffic and, in turn, negatively impact industries dependent on water transportation. Following the 1996 drought, the Oklahoma Water Resources Board commissioned a drought contingency plan, which estimated that the navigability of the vital McClellan-Kerr Arkansas River Navigation System could be severely impaired by drought.¹⁶ Significant drops in water levels would affect shipping for the more than 10 million tons shipped through the system annually via its 445-mile waterway.¹⁷ Companies attempting to transport goods would face delays and could be required to use pricier transportation alternatives such as rail or truck.¹⁸



Oklahoman Labor Force Projected to be Directly Affected



Source: Oklahoma Employment Security Commission¹⁹

Pay Now: The Benefits of Taking Action

Oklahoma stands to lose part of its traditional income due to the effects of climate change. It also stands to lose part of its traditional income should the country work actively and enact the necessary policies to counter climate change. The state is rich in oil fields, refineries, and the like; the

state's economy has long been dependent on this sector. Oklahoma is also rich in natural gas, a better, but not perfect, alternative to the oil and coal it produces.²⁰

Moreover, the state is positioned to benefit from further developing renewable energy resources. Oklahoma already taps into wind energy resources and generates 7% of its electricity using other renewable resources.²¹ However, renewables can contribute much more, particularly by further exploiting wind energy potential—Oklahoma has 2.3 times more potential wind energy per square mile than the neighboring state of Texas. **The panhandle region alone could realize \$12 billion in capital investment in wind energy—which holds the potential to generate more than 8,400 MW—and could yield \$1.2 billion in wind-generated electricity annually.**²² By comparison, all of Oklahoma currently produces only 1,130 MW.²³ Oklahoma's location

near existing wind projects in the center of the wind corridor, its robust manufacturing industry, and its central U.S. location are important factors in further developing its renewable energy capacity.²⁴

Thanks to its unique geography and environment, Oklahoma has the potential to produce 17 times the state's annual electricity needs²⁵ (9% of the entire country's electricity needs) via wind energy.²⁶

Conclusion

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

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

(Endnotes)

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- 17 Oklahoma Department of Commerce, *Waterways*. <http://www.okcommerce.gov/Site-Selection/Maps/Waterways> (accessed June 7, 2010).
- 18 Oklahoma Drought Management Team, Oklahoma Water Resources Board, 7-8.
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