

FACTS NEVADA

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: Nevada

Two million people in Nevada depend on Lake Mead for daily water consumption. There is a 50% chance that it will be dry by 2050 due to climate change—a 10% chance it will dry up by 2021.¹

A 3% decrease in the number of visitors to Nevada will result in indirect losses of \$323 million in hotel expenditures and an additional \$332 million in restaurant losses.²

Nevada's renewable energy capacity (169 million MWh)³ is over five times its current annual usage (32 million MWh).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 Nevadans \$38.7 billion in GDP and over 220,000 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, however, as we have used in our research, allow us to see that Nevada faces significant losses in industries crucial to its economy if no action is taken.

Moreover, data shows Nevadans are in a position to benefit from the research, development, and use of renewable energy technologies. Nevada's renewable energy potential is tremendous: 20 million MWh/year from geothermal, 93 million MWh/year in solar energy, 55 million MWh/year in wind resources, and 1 million MWh/year from biomass,⁵ totaling 169 million MWh/year—over five times the total electricity consumed in Nevada in 2005.⁶ Nevada is expected

to add upwards of 80,000 green jobs to its economy by 2025, largely, and laudably, due to its commitment to producing 20% of its energy using renewable resources.⁷ Nevadans stand to gain significant numbers of jobs and benefit from economic growth as investment in renewable energy grows. Should we fail to take action against climate change, Nevadans have much to lose.

Pay Later: The Cost of Inaction

Should we ignore climate change in our policy making, Nevadans will be among the many Americans likely to pay for the costs associated with warmer temperatures. Higher temperatures and increased flooding in Nevada will likely force a decline in

population growth, jeopardize water supplies, and cause negative health effects.

Depleting Water Supply

Lake Mead, the reservoir created by the Hoover Dam, supplies 90% of Las Vegas' water and, along with Lake Powell, is the key supplier of water to the Colorado River, whose watershed encompasses seven U.S. states.⁸ **According to one study, Lake Mead could dry up as soon as 2021, putting Nevadans' access to reliable and affordable water in jeopardy and leaving 12-36 million people across the region without a dependable water supply.**⁹

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Despite conservation efforts, Lake Mead and Lake Powell were at less

than half their capacity in 2007, signaling heightened evaporation, a consequence of climate change. Even as the population grew by 330,000 people from 2002-2006 (and 40 million visited the state), Nevada decreased its water consumption by 18 billion gallons.¹⁰

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Adaptation and conservation efforts will likely prove particularly costly considering that Nevada's population has been projected to grow by 71% between 1997 and 2020. From 1997-2020, Clark County, the home of Las Vegas, is projected to increase by over 985,000 inhabitants (a growth of nearly 83%).¹¹ Water shortages will hinder the continued population growth of Nevada and other Southwestern states, and cause a "ripple effect" on Nevada's job market and consumer spending.¹² Furthermore, Nevada is not the only state dependent on the Colorado River with a booming population; Arizonan and Californian populations, for example, increased from 2000-2009 by 28.6¹³ and 9.1%,¹⁴ respectively.

The Colorado River basin is supplied primarily by melting snow in the Rocky Mountains, and is regulated according to the timing and level of these resources. Allocations for hydroelectric power and irrigation, in particular, place severe strains on the system, and a long-term decline in precipitation will further compli-

cate the system's ability to maintain supplies.¹⁵ Coupled with the boom of southern Nevada's population and economy in past decades, the ability to maintain current power generation and committed deliveries of water is not sustainable in the long-term.¹⁶

Decreased water levels also mean higher concentrations of pollutants and increased costs for construction, which, at 11% of gross state product (GSP), is Nevada's 5th largest industry. The Southern Nevada Water Authority explored decreasing development in order to deal with declining water supplies and found that holding construction related sectors at 65% of current production levels would result in \$17 billion of losses in federal, state, and local tax revenues, amounting to over \$3 billion in collection losses for state and local governments over a 14-year period. Nevada's dilemma is that continued growth places unsustainable demand on the water regime, yet construction-related industries employ 17% of its workforce.¹⁷

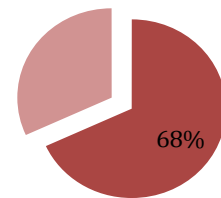
What Happens Here... Hurts Nevada's Economy

Declining water supplies, forest fires, and the urban heat island effect could devastate the tourism industry. **Tourism is Nevada's largest, most profitable (27% of GSP) industry, employing 27% of the workforce; greater Las Vegas was responsible for nearly \$42 billion in spending by 39.5 million tourists in 2006 alone. Golfing, for example, which generates roughly \$1.1 billion in tourist spending annually and employs nearly 4,500 people, will be significantly affected. Today three out of every ten visitors to Nevada play golf during their stay; "browning" of golf courses (a result**

of inadequate water supplies) will likely result in a loss of almost \$600 million and 3,300 jobs.¹⁸

Between 5,000 and 50,000 people visit each of Nevada's state parks each year, but the increased threat of forest fires—a result of heightened drought—will attract fewer visitors and threaten the state's biodiversity. The urban heat island effect, a phenomenon in which cities are on average 7-10°F hotter than the surrounding areas, could potentially discourage prospective visitors. Lake Mead generates an annual \$1 billion from tourism and recreation.¹⁹ Overall, accommodation and food service in Nevada generated over \$18 billion in 2008.²⁰ A mere 3% decrease in visitors caused by climate change would result in a loss of \$323 million to the hotel industry and \$332 to the restaurant industry—and cost the state as many as 21,000 jobs in just these two sectors.²¹

Nevadan Labor Force Projected to be Directly Affected



Source: Nevada Department of Employment, Training and Rehabilitation²²

Costs to the Agricultural Industry

As water is increasingly devoted to urban development and electricity generation, supplies for agriculture and rural areas are threatened. Nevada's \$500 million agricultural

industry is severely threatened by water scarcity and the increasingly prevalent sale of water rights to metropolitan areas.²³ Water shortages lead to higher prices and increased irrigation costs, which will damage the industry's revenue.²⁴

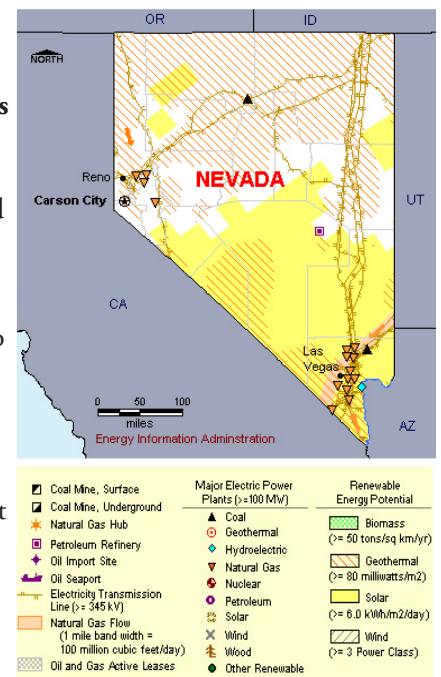
Declining Public Health

Residents' health will be damaged by higher temperatures, increased water contamination, flooding, and receding water levels. Increased temperatures cause elevations in ozone levels, which cause asthma and other respiratory diseases. The urban heat island effect will threaten the health of the two-thirds of Nevadans that live in metropolitan areas. Finally, drought leads to flooding and increased runoff due to drier conditions; the ground's inability to absorb excess precipitation from extreme storms causes property damage and leads to higher rates of water-borne diseases. As water levels fall, concentrations of pollutants (such as perchlorates found in Lake Mead) increase and can cause health problems.²⁵

Pay Now: The Benefits of Taking Action

Nevada's renewable resources could curb its dependence on carbon-emitting fuels—and generate enough electricity to meet its demands and export the excess to its neighbors. Nevada is home to more geothermal and solar power potential than any other state in the nation.²⁶ Investment in its renewable energy sources would make Nevada a leader in renewable energy production in the United States and contribute to a cleaner and more secure energy future for all Americans.

Nevada currently generates 58% of its electricity in coal-fired plants. Less than 5% is now generated by clean, renewable fuels, but the state has committed to an increase to 15% by 2013.²⁷ Solar, wind, biomass, and geothermal resources in Nevada total 169 million MWh/year²⁸ while total consumption in 2005 was approximately 32 million MWh.²⁹ **Nevada can potentially generate nearly five times its current yearly demand using its three main renewable resources: solar, geothermal and wind.**³⁰ Investment in these resources is ambitious by national standards, but Nevada's current renewable generation ranks 25th in the country.³¹



Conclusion

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

Nevadans 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.

(Endnotes)

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