

CLIMATE POWER 2020

ARIZONA

What Do Trump's Attacks On Science Mean For Arizona?

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TL/DR:

Arizonans Believe In Climate Change - And They Want Their Leaders To Act:

- [67% of Arizonans](#) believe in climate change, and [60% of the state's residents](#) are worried about climate change.
- [58% of Arizonans](#) believe the President should do more to address climate change, [59%](#) believe Congress should do more, and [54%](#) believe their Governor should do more, and [55%](#) believe their local officials should do more.
- [Click here to jump to more research below](#)

Trump's Climate Denial Is Harmful To Arizonans' Health:

- In 2018, heat stress illness was [responsible](#) for nearly 3,000 emergency room visits in Arizona, and currently, [more than 200,000](#) Arizonans are especially vulnerable to extreme heat.
- In 2019, five Arizona counties [received](#) an "F" grade for the number of days of unhealthy ozone levels, and two counties also [received](#) Fs for particle pollution. Phoenix's air is among the [worst polluted](#) in the nation.
- [Click here to jump to more research below](#)

Trump's Climate Denial Puts The Safety Of Arizonans At Risk:

- Arizona is at risk from climate-related severe storms and monsoons:
 - In 2019, [FEMA](#) incurred \$55,140 in disaster costs in Arizona following severe storms.

- Arizona is at risk from climate-related wildfire and drought:
 - [Studies show](#) climate change is increasing the severity, frequency, and extent of wildfires.
 - 384,942 acres of land burned in Arizona in 2019 – and this year's [Bighorn fire](#) has already forced evacuations around Tucson.
 - As of this publication, [four fires](#) were burning over 50,000 acres across the state
 - In the past decade, Arizona has [witnessed](#) six wildfires that caused a total of \$28 billion in damages and 108 deaths.
- Climate change is [already affecting](#) global patterns of drought, and such trends are expected to continue, with longer and more intense droughts [predicted](#).
 - Since 2012, Arizona has [witnessed](#) five drought events that caused a total of \$22.1 billion in damages and 176 deaths.
- [Military servicemembers](#) at Arizona bases are at risk from extreme heat impacting their duties
 - The Marine Corps Air Station in Yuma is projected to experience 117 days over 100 degrees.
 - Luke Air Force Base is projected to experience 112 days over 100 degrees.
 - The Tucson International Airport Air Guard Station is projected to experience 76 days over 100 degrees.
- [Click here to jump to more research below](#)

Trump's Climate Denial Hurts Arizona's Economy:

- Climate change will [cost](#) Arizona \$17,368,290,000 annually by the year 2100.
- Arizona is [expected](#) to suffer worse than the rest of the country under climate change, costing 8% of GDP in Maricopa County alone.
- Climate change is [projected](#) to cause a 37% loss in crop yields in Arizona, including a 69% loss in cotton production. The state's agriculture sector [generated](#) \$23.3 billion in revenue and employed 138,000 people in 2019.
- Outdoor recreation in Arizona [supports](#) 201,000 jobs and \$21.2 billion in consumer spending. In 2018, tourism [generated](#) \$24.4 billion in visitor spending and supported more than 192,000 jobs in the state.
- In the past decade, Arizona has [experienced](#) 11 climate-related disasters responsible for \$89.7 billion in damages.
- Since Trump assumed office, Arizona has [experienced](#) two climate-related disasters responsible for over \$22 billion in damages.

- Trump's clean cars rollback will [cost](#) Arizonans over \$404 million per year.
- [Click here to jump to more research below](#)

Trump's Climate Denial Is Especially Harmful To People Of Color In Arizona:

- African Americans have [higher death rates](#) from heat related illnesses, and [research has shown](#) that neighborhoods with a history of racist, exclusionary redlining tend to also experience much hotter temperatures.
- Phoenix & Tucson are [heavily impacted](#) by unhealthy ozone and particle pollution.
 - Ozone has been [linked](#) to asthma, and Black children are [four times](#) more likely to be admitted to the hospital and [ten times](#) more likely to die from asthma.
- Communities of color in Arizona [continue to fight against](#) toxic groundwater, [air pollution](#), and proposals to build a [copper mine](#) on sacred tribal grounds.
- [Click here to jump to more research below](#)

Arizona Has An Opportunity To Build A Strong Green Economy:

- Arizona was ranked 19th in the nation for clean energy employment in 2019, with the sector [employing](#) 62,106 workers.
- Arizona is [home](#) to three of the five sunniest cities in the U.S. In 2019, Arizona was home to over 7,777 jobs in the [solar industry](#) and 1,001 to 2,000 direct jobs in the [wind industry](#).
- [Click here to jump to more research below](#)

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HERE'S WHAT'S HAPPENING:

A [majority](#) of Arizonans both believe in climate change and want their elected officials at all levels to do more to address the issue. President Trump's climate denial is harmful to Arizona's health, safety, and economy – and is particularly harmful to communities of color.

In 2018, heat-related illnesses [resulted in](#) nearly 3,000 emergency department visits in Arizona, and currently more than 200,000 Arizonans being [especially vulnerable](#) to extreme heat.

In 2019, five Arizona counties [received](#) an “F” grade for the number of days of unhealthy ozone levels, and two counties also [received](#) Fs for particle pollution. Phoenix's air is among the [worst polluted](#) in the nation.

In addition to health factors, Trump's Climate Denial places the safety of Arizonans at risk. In 2019, [FEMA](#) incurred \$55,140 in disaster costs in Arizona following severe storms. In the past decade, Arizona has [witnessed](#) six wildfires that caused a total of 28 billion in damages and 108 deaths and five drought events that [caused](#) a total of 22.1 billion in damages and 176 deaths.

[Three](#) of Arizona's military bases are expected to be exposed to extreme temperatures by 2050: the Marine Corps Air Station in Yuma is projected to experience 117 days over 100 degrees, Luke Air Force Base is projected to experience 112 days over 100 degrees, and the Tucson International Airport Air Guard Station is projected to experience 76 days over 100 degrees.

Trump's climate change denial harms Arizona's economy. Climate change is estimated to [cost](#) Arizona over \$17 billion dollars annually by the year 2100. Arizona is [expected](#) to suffer worse than the rest of the country under climate change, costing 8% of GDP in Maricopa County alone. In the past decade Arizona has [experienced](#) 11 climate-related disasters responsible for almost \$90 billion in damages, and since Trump assumed office, Arizona has [experienced](#) two climate-related disasters responsible for over \$22 billion in damages. Trump's climate policies' harm upon the state's economy can be evidenced with his administration's clean cars rollback, which will [cost](#) Arizonans over \$404 million per year.

Trump's Climate Denial is especially harmful to people of color in Arizona. Communities of color in Arizona [continue to fight against](#) toxic groundwater, [air pollution](#), and proposals to build a [copper mine](#) on sacred tribal grounds.

Despite Trump's climate change denial, Arizona has an opportunity to build a strong green economy. Arizona was ranked 19th in the nation for clean energy employment in 2019, with the sector [employing](#) 62,106 workers. Arizona is [home](#) to three of the five sunniest cities in the U.S. In 2019, Arizona was home to over 7,500 jobs in the [solar industry](#) and 1,001 to 2,000 direct jobs in the [wind industry](#).

RESEARCH:

ARIZONANS WANT CLIMATE ACTION

67 Percent Of Arizonans Believe In Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 67% of Arizonans agree that global warming is happening. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

60 Percent Of Arizonans Are Worried About Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 60% of Arizonans are worried about global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

58 Percent Of Arizonans Believe The President Should Do More To Address Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 58% of Arizonans believe the President should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

59 Percent Of Arizonans Believe That Congress Should Do More To Address Global Warming. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 59% of Arizonans believe that Congress should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

54 Percent Of Arizonans Believe That Their Governor Should Do More To Address Global Warming. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 54% of Arizonans believe that their Governor should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

55 Percent Of Arizonans Believe That Their Local Officials Should Do More To Address Global Warming. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 55% of Arizonans believe that their local officials should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

TRUMP'S CLIMATE DENIAL IS HARMFUL TO ARIZONANS' HEALTH

EXTREME HEAT

Record-Breaking Temperatures

Climatologist: Yes, Arizona Has Been Experiencing Increasingly Hotter Summers. In August of 2018, KJZZ reported: "Via Q&AZ, KJZZ listeners Sarath Joshua and Tabitha Myers asked if Phoenix has been experiencing increasingly hotter summers. Nancy Selover, the climatologist for the state of Arizona, said without a doubt: Yes. 'Phoenix summers are getting hotter and Phoenix winters are also getting hotter,' she said. 'But it's not necessarily that the high temperatures of the day are getting much hotter than they used to.' While temperatures above 110 raise eyebrows, the highs in Phoenix haven't changed that much in the last 70 years. The nighttime temperature — or the average lowest temperature — is the best indicator of overall change, Selover said. According to data from the National Weather Service, the nighttime low has increased about seven degrees in Phoenix since the 1940s." [[KJZZ, 8/30/2018](#)]

AZ Republic Headline: "Phoenix Sees Back-To-Back Record-Breaking Heat On Wednesday With A High Of 114 Degrees." In August of 2019, the Arizona Republic reported with the headline "Phoenix sees back-to-back record-breaking heat on Wednesday with a high of 114 degrees." According to the article: "Phoenix broke a high-temperature record for the third time in 2019 on Wednesday after breaking a record on Tuesday as well. But while Tuesday's record was broken by 1 degree — 113 degrees over the previous record of 112 degrees in 1986 — Wednesday shattered its previous record of 110 degrees in 2007 with a recorded high of 114 degrees. The National Weather Service tweeted the announcement shortly before 2 p.m. The agency previously announced the broken record about 12:37 p.m. when the temperature reached 112 degrees. The Weather Service didn't say if it expects even higher temperatures later into the afternoon." [[Arizona Republic, 8/21/2019](#)]

Arizona Is Currently The Fourth-Fastest Warming State In The United States. According to States At Risk, "Arizona is currently the fourth-fastest warming state in the country based on warming rates since 1970." [[StatesAtRisk.Org, Accessed 5/1/2020](#)]

Number Of Extreme Heat Days

Arizona Currently Experiences An Average Of 50 Extreme Heat Days Per Year, The Second Highest In The Nation. According to States At Risk, Arizona currently experiences an

average of 50 extreme heat days per year, the second highest in the nation.

[\[StatesAtRisk.Org, Accessed 4/29/2020\]](#)

By 2050, The Number Of Extreme Heat Days Arizona Experiences Annually Is Projected To Jump To 80. According to States At Risk, Arizona is expected to see 80 days of extreme heat per year by 2050, an increase of 30 days from current averages. [\[StatesAtRisk.Org, Accessed 4/29/2020\]](#)

Arizona Is Projected To See Heat Wave Days More Than Triple By 2050. According to States At Risk, Arizona is projected to see heat wave days more than triple by 2050. [\[StatesAtRisk.Org, Accessed 4/29/2020\]](#)

Phoenix, Arizona, Is The Second Fastest-Warming City In The U.S. According to States At Risk, Phoenix, Arizona, is the second fastest-warming city in the United States. [\[StatesAtRisk.Org, Accessed 5/1/2020\]](#)

Health Impact

With 197 Deaths From Extreme Heat In 2019, Maricopa County Broke Previous Record For Extreme Heat Deaths. In May of 2020, KJZZ radio reported: "A record number of 197 people died from heat in Maricopa County last year. That's an 8% increase from 2018. However, fewer people died indoors. The Maricopa County Public Health Department used records from the Medical Examiner's Office to determine that 137 fatalities were directly caused by heat, and another 60 involved heat and other medical issues. Records also indicated that 70% of heat-related deaths happened in July and August when the combination of heat and monsoon humidity can be brutal." [\[KJZZ, 5/12/2020\]](#)

- **With 182 Dead From Extreme Heat In 2018, Maricopa County Broke Records For The Number Of People Killed By Extreme Heat Three Years In A Row.** In May of 2019, the Arizona Republic reported: "A preliminary report by the Maricopa County Department of Public Health shows just how deadly the heat has become. The department confirmed there were 182 heat-associated deaths in Maricopa County in 2018. That's the highest number of heat deaths for the last 13 years. It's the third consecutive year the death toll has set a new record. In 2016, a total of 154 people died. In 2017, the number rose to 179. For 2018, in 119 cases, environmental heat was the direct cause of death. In the other 63 cases, heat contributed to the cause of death." [\[Arizona Republic, 5/7/2019\]](#)

Heat Related Illnesses Were Responsible For Almost 3,000 ER Visits In 2018. In August of 2019, Arizona PBS's Cronkite News reported: "In Arizona, the number of heat-related illnesses skyrockets during summer months and has continued to increase year-over-year, according to the Arizona Department of Health Services. In 2018, heat-related illnesses accounted for 2,898 of the 2,990 emergency-room visits statewide from April to September. ER visits peaked in July, with 941 visits. Without federal or state mandated

protections, we asked some of Arizona's high-heat workers how they stay safe under the sun." [[Arizona PBS./Cronkite News, 8/7/2019](#)]

Currently, More Than 200,000 Arizonans Are Especially Vulnerable To Extreme Heat.

According to States At Risk, there are 200,000 people who are particularly vulnerable to extreme heat – those under 6 years old, above 65 years old, or living in extreme poverty – in Arizona. [[StatesAtRisk.Org, Accessed 4/29/2020](#)]

By 2050, The Severity Of Summer Drought Is Projected To More Than Triple In Arizona, The Second Highest Increase Behind Washington State.

According to States At Risk, "By 2050, the severity of widespread summer drought is projected to more than triple in Arizona, the second largest increase behind Washington." [[StatesAtRisk.Org, Accessed 4/29/2020](#)]

ACCESS TO CLEAN AIR

Ozone & Asthma In Arizona

American Lung Association Report Found Phoenix & Tucson "Heavily Impacted By Unhealthy Ozone And Particle Pollution." On April 21, 2020, the American Lung Association issued a press release announcing: "The American Lung Association's 2020 "State of the Air" report found Phoenix ranked among the nation's worst cities for widespread air pollutants—ozone and particulates—both of which can be deadly. Both Phoenix and Tucson are heavily impacted by unhealthy ozone and particle pollution and, in fact, the Phoenix metro area ranks in the top 10 in these categories with the Tucson metro area also worsening in all categories." [[American Lung Association, 4/21/2020](#)]

Two Arizona Counties Received "F" Grades For High Particle Pollution In 2019. According to the American Lung Association's annual State of the Air report in 2019, Maricopa and counties received a grade of "F" for high particle pollution. [[American Lung Association State of the Air Report Card: Arizona, 2020](#)]

Five Arizona Counties Received "F" Grades For Ozone Pollution in 2019. According to the American Lung Association's annual State of the Air report in 2019, Gila, Maricopa, Pima, Pinal, and Yuma counties all received a grade of "F" for having high ozone days. [[American Lung Association State of the Air Report Card: Arizona, 2020](#)]

Asthma and Allergy Foundation: "Ozone Triggers Asthma." According to the Asthma and Allergy Foundation of America, "Ozone, a gas, is one of the most common air pollutants. Ozone contributes to what we typically experience as "smog" or haze. It is most common in cities where there are more cars. It is also more common in the summer when there is more sunlight and low winds. Ozone triggers asthma because it is very irritating to the lungs and airways. It is well known that ozone concentration is directly related to asthma attacks. It has also caused the need for more doses of asthma drugs and emergency

treatment for asthma. Ozone can reduce lung function. Ozone can make it more difficult for you to breathe deeply." [[Asthma and Allergy Foundation of America, October 2015](#)]

CDC Data: Asthma Rate In Arizona Higher Than The National Average. According to data generated by the Centers For Disease Control's Behavioral Risk Factor Surveillance System survey, the overall total adult asthma prevalence rate for the United States was 9.2 percent, while the rate for Arizona was 10.0 percent. [[Centers for Disease Control BRFSS, 2018 Adult Asthma Data, Table C1](#)]

KTAR/Cronkite News: "Phoenix Area Among Worst In Nation For Air Pollution, Study Finds." In June of 2018, KTAR ran a Cronkite News story under the headline "Phoenix area among worst in nation for air pollution, study finds." According to the article: "The Phoenix area was among the top five-largest metro areas with the most days of smog in 2016, according to a national study released Wednesday by an Arizona research group. The Phoenix-Mesa-Scottsdale area had 110 days of "degraded" air quality in 2016, with only the Los Angeles, Philadelphia and Atlanta metro areas having more bad air days, according to the report by the Environment Arizona Research & Policy Center." [[KTAR/Cronkite News, 6/28/2018](#)]

Trump's Clean Cars Rollback Threatens Clean Air Act Violation In AZ

Washington Post Headline: "Trump Administration Moves Forward With Looser Air Rules As Respiratory Disease Grips U.S." On March 31st, 2020, the Washington Post reported: "The Trump administration is moving forward with easing restrictions on air pollution even as the novel coronavirus — and the deadly respiratory disease it causes — grips the country. Many of the moves were a long time coming. But the timing has incensed President Trump critics, who accuse the administration of taking steps that will reduce air quality at a time when scientists are beginning to consider whether pollution increases the risk of coronavirus infection and intensifies the symptoms of covid-19. 'Air pollution reduces our body's ability to fight infection,' Moms Clean Air Force co-founder Dominique Browning said. 'Pollution from power plants and trucks and cars is also one of the causes of the underlying heart and lung problems that make people more vulnerable to covid-19.'" [[Washington Post, 3/31/2020](#)]

Cars Make Up The Biggest Source Of Ozone-Forming Pollutants In Arizona. In April of 2019, the Arizona Republic reported: "'A lot has to do with climate change,' said JoAnna Strother, the Lung Association's director of advocacy for the Southwest region. 'That and Phoenix has 1.6 million people and a big chunk of them live in the metro area where a lot of people are driving and sitting in standstill traffic. All of that contributes to ozone.' Ozone is a colorless, odorless gas that, in high levels, can be extremely hazardous for lungs, Strother said. The toxic gas forms when nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the sunlight. Combine a high volume of vehicle emissions —

cars make up the biggest source of NOx and VOCs in Phoenix — with the Arizona desert's plentiful sunshine and the result is a recipe for ozone." [[Arizona Republic, 4/24/2019](#)]

Arizona's Department Of Environmental Quality Opposed Trump's Plan To Roll Back Clean Car Standards Because It Would Lead To The State Exceeding Ozone Limits. "The Trump administration's plan to roll back federal car standards promises to be a major fight with California and other liberal states. But it's also opposed by at least one state that voted for President Trump. Arizona wants to maintain the aggressive standards established under former President Obama to avoid future regulations on air pollution, said Timothy Franquist, air quality director for the Arizona Department of Environmental Quality (ADEQ). His office opposes Trump's plan to freeze the standards at 2020 levels. 'We are going to talk the language of both aisles that this is bad for the health, bad for the economy,' Franquist said of the president's plan. The vehicle emissions standards focus on greenhouse gases, but they're also linked to ozone. That's significant for Arizona because the air quality around Phoenix could violate EPA ozone standards set in 2008." [[Scientific American, 8/9/2018](#)]

High Ozone Concentrations Could Put Arizona In Nonattainment Status, Which Would Threaten Federal Infrastructure Projects. In July of 2018, KGUN 9 reported: "As ozone concentrations continue to be at high levels in the Tucson area this summer as reported by the Pima County Department of Environmental Quality, the region could face consequences and be designated a 'nonattainment' area. According to Pima Association of Governments, the designation would make it harder for the region to spend federal dollars for needed transportation projects, unless improvements in air quality are made." [[KGUN 9, 8/1/2018](#)]

Chamber Of Commerce Group Warns If Arizona Cannot Meet Air Quality Standards by 2024, Industry Will Pay A Hefty Regulatory Price Because Of Auto Emissions. Chamber Business News is a project of the Arizona Chamber Foundation in partnership with the Arizona Chamber of Commerce & Industry. In February of 2020, Chamber Business News published an article saying: "Arizona industry could be faced with a \$250-million bill for air pollution that is mostly created by everyday drivers in the Phoenix metro region, said the director of the Arizona Department of Environmental Quality (DEQ), Misael Cabrera. If the region cannot meet more stringent federal air quality standards by 2024, a new layer of costly regulatory controls will kick in. Businesses will pay the bulk, Cabrera said." [[Chamber Business News, 2/4/2020](#)]

TRUMP'S CLIMATE DENIAL PUTS THE SAFETY OF ARIZONANS AT RISK

SEVERE STORMS/MONSOONS

Link To Climate Change

Heavy Rainstorms Have Become Heavier And More Frequent In The U.S. In The Past Three To Five Decades. According to the National Climate Assessment, "Heavy downpours are increasing nationally, especially over the last three to five decades. The heaviest rainfall events have become heavier and more frequent, and the amount of rain falling on the heaviest rain days has also increased." [National Climate Assessment, Extreme Weather, [2014](#)]

Scientists Have Linked An Increase in Heavy Downpours To Climate Change. According to the National Climate Assessment, "Global analyses show that the amount of water vapor in the atmosphere has in fact increased due to human-caused warming. This extra moisture is available to storm systems, resulting in heavier rainfalls." [National Climate Assessment, Extreme Weather, [2014](#)]

In 2019, FEMA Obligation Over \$555,000 To Arizona Following Severe Storms

2019: FEMA Obligated \$555,140 To Arizona Following Severe Storms. According to data from the Federal Emergency Management Agency, Arizona was obligated \$555,140 in 2019 following severe storms. [[FEMA.Gov, Accessed 5/21/2020](#)]

WILDFIRE

Link To Climate Change

Climate Change Is Increasing The Severity, Frequency, And Extent Of Wildfires. According to a report from the EPA: "Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires in Colorado, which could harm property, livelihoods, and human health. In 2013, the Black Forest Fire burned 14,000 acres and destroyed over 500 homes. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems. The size and number of western forest fires have increased substantially since 1985." [[Environmental Protection Agency, "What Climate Change Means for Colorado" August 2016](#)]

The National Climate Assessment Has Found That The Number Of Wildfires Is Likely To Increase As The Climate Warms And Could Induce "Profound Changes To Certain Ecosystems." In August of 2018, The Atlantic reported: "As if there wasn't enough evidence of that. Last year, the National Climate Assessment—written by a panel of scientists in the military, federal civilian agencies, and private universities—reviewed the complete

scientific literature on climate change and wildfires. They concluded that the number of large blazes had increased since the early 1980s. They also said the number of wildfires 'is projected to further increase in those regions as the climate warms.' They warned this could induce 'profound changes to certain ecosystems.'" [The Atlantic, [8/10/18](#)]

Acres Burned By Wildfire Doubled In Recent Decades Due To Climate Change. According to the 2018 National Climate Assessment Report: "Wildfire is a natural part of many ecosystems in the Southwest, facilitating germination of new seedlings and killing pests. Although many ecosystems require fire, excessive wildfire can permanently alter ecosystem integrity. Climate change has led to an increase in the area burned by wildfire in the western United States. Analyses estimate that the area burned by wildfire from 1984 to 2015 was twice what would have burned had climate change not occurred. Furthermore, the area burned from 1916 to 2003 was more closely related to climate factors than to fire suppression, local fire management, or other non-climate factors." [[National Climate Assessment, Chapter 25, 2018](#)]

NAU Study Found That Acreage Burned In Arizona And New Mexico Wildfires Increased By Almost 20K Acres Annually Since The Mid-Eighties. In March of 2019, KNAU reported: "A new study from Northern Arizona University shows the area burned by wildfires in Arizona and New Mexico has increased by about twenty thousand acres annually since the mid-eighties. KNAU's Melissa Sevigny reports. Scientists compared before-and-after satellite images of wildfires in forests and woodlands. They found upward trends in the frequency of wildfires, the number of acres burned overall, and the number of acres burned severely. Megan Singleton of Northern Arizona University is the lead author. 'We're seeing a fire regime shift in ponderosa pine especially and more drier types of vegetation, and this gives managers a better idea of what's going on in these ecosystems so they can manage them more appropriately in the future,' Singleton says. Wildfires worsened after the current drought began in the year 2000. Singleton says more research is needed on the links between fire and the Southwest's drying climate." [[KNAU, 3/1/2019](#)]

2020 Season

This was an active situation as of the last update to this research on 6/15/2020

As Of June 14th, 2020, Multiple Fires Were Burning Over 50,000 Acres In Arizona. At 10:09pm Mountain Time on June 14, 2020, the Arizona Republic reported: "Officials say that two wildfires burning at opposite ends of the state continued to grow overnight. A brush fire about 30 miles east of Phoenix also grew overnight to more than 7,400 acres, which was more than 10 times its initial size Saturday evening. The Mangum Fire near Grand Canyon North Rim burned nearly 20,000 acres and was 2% contained as of Sunday evening. Near Tucson, the Bighorn Fire burned 11,500 acres in the Santa Catalina Mountains. Officials said it was 11% contained as of Sunday. In the Tonto National Forest, the Bush Fire doubled in size on Sunday to reach 14,000 acres with no containment. Large swaths of Arizona are especially vulnerable to wildfires currently, as dry conditions, winds

and low humidity create conditions ripe for fast-moving blazes." [\[Arizona Republic, 6/14/2020, 10:09pm MT\]](#)

As Of June 14th, 2020, The Bighorn Fire Burned Over 13K Acres Near Tucson. At 10:09pm Mountain Time on June 14, 2020, the Arizona Republic reported on the "Bighorn Fire." According to the Republic: "The Bighorn Fire, burning in the Santa Catalina Mountains near Tucson, burned 13,200 acres and was 22% contained as of Sunday night. The fire was ignited by lightning more than a week ago and caused three minor heat-related illnesses. As of Sunday, 560 personnel were working to stop the fire. The fire was most active in the Pusch Ridge Wilderness around Romero Canyon and Cathedral Rock. [\[Arizona Republic, 6/14/2020, 10:09pm MT\]](#)

- **Residents Near Catalina State Park Were Told To Evacuate Because Of The Bighorn Fire.** On Friday, June 12, 2020, the Tucson Sentinel reported: Residents near Catalina State Park must leave their homes Friday night because of the approaching Bighorn Fire, which has burned northward, officials said. The area, near Golder Ranch Drive, is roughly bounded by the Forest Service line on the south and east, Sutherland Trail on the west, and Rollins Road on the north, the Pima County Sheriff's Department said. 'If you are in this area, EVACUATE NOW. Move west away from the Catalina Mountains. Do not delay leaving the area,' PCSD said." [\[Tucson Sentinel, 6/12/2020\]](#)
- **Bighorn Fire Evacuation Order Was Lifted Sunday Night, June 14, But Residents Were Told To Remain On Alert.** At 10:09pm Mountain Time on June 14, 2020, the Arizona Republic reported on the "Bighorn Fire." According to the Republic: "The Pima County Sheriff's Department issued an evacuation notice for residents in the vicinity of East Golder Ranch Drive and East Collins Road. Residents are asked to evacuate immediately when the danger is 'current and life-threatening.' Around 8 p.m. the Pima County Sheriff's Department told residents who evacuated they could go back to their homes. Officials said in a press release, 'It is imperative to remain alert,' and the flames will appear to be close by." [\[Arizona Republic, 6/14/2020, 10:09pm MT\]](#)
- **Residents Of Mount Lemmon And Summerhaven Were Told To Prepare For Evacuation As Of The Morning Of June 15th.** On June 15th, 2020, KOLD 13 News reported: "Officials said the Bighorn Fire is at 13,200 acres with 22 percent containment as of early Monday, June 15. At 7 p.m. Sunday, residents of Mount Lemmon and Summerhaven were told to get set to evacuate due to the fire. The set area includes Mount Lemmon, Mount Bigelow Organization Ridge Road and Summerhaven. Catalina Highway is closed to the public, but it will remain open to residents and business owners. 'There is significant danger in the below area from the Bighorn Fire,' officials said in a news release. Ready, Set, Go is the state's evacuation alert system. The three steps encourage Arizonans to get READY by preparing now for what threatens their community, to be SET by maintaining awareness of significant danger, and to GO, to evacuate immediately when the danger is current and life-threatening. Officials said residents who can get out of the area voluntarily should." [\[KOLD 13 News, 6/15/2020 5:05 AM\]](#)

As Of June 14th, 2020, The Mangum Fire Burned Almost 20K Acres Of The Kaibab National Forest Near Jaco Lake Neat The Grand Canyon Rim. At 10:09pm Mountain Time on June

14, 2020, the Arizona Republic reported on the “Mangum Fire.” According to the Republic: Strong winds and “extremely active fire behavior” on Saturday pushed the fire through 19,806 acres of Kaibab National Forest toward the unincorporated community of Jacob Lake, located about 30 miles north of the Grand Canyon National Park’s North Rim. The fire crossed Highway 89A and moved northeast, officials said. The cause of the blaze, which began Monday about nine miles southwest of Jacob Lake at Magnum Springs, remained under investigation. As of Sunday night, 436 personnel were working to stop the fire.” [[Arizona Republic, 6/14/2020, 10:09pm MT](#)]

As Of June 14th, 2020, The Bush Fire Burned 14K Acres In the Tonto National Forest. At 10:09pm Mountain Time on June 14, 2020, the Arizona Republic reported on the “Bush Fire.” According to the Republic: “A brush fire in the Tonto National Forest near Bush Highway and State Route 87 burned 14,000 acres and was 0% contained as of Sunday, according to the Tonto National Forest officials. The fire, named the Bush Fire, started on Saturday and grew quickly. On Sunday, the fire doubled in size from 7,445 to 14,000 acres, and was burning on both sides of Highway 87 in the Sugarloaf and Four Peaks recreation areas. Crews were working to build containment lines on Sunday and extinguishing hot spots where possible, officials said.” [[Arizona Republic, 6/14/2020, 10:09pm MT](#)]

Arizona’s 2020 Wildfire Season Is Expected To Mirror The State’s 2019 Wildfire Season, Which Saw 1,860 Fires Burn An Estimated 400,000 Acres Of Land Across The State. According to Arizona Central, “The upcoming wildfire season is predicted to mirror recent years — outside of the threat of COVID-19. [...] About 1,860 wildland fires burned an estimated 400,000 acres of private, state, federal and tribal lands in areas under similar conditions in 2019. Officials estimate at least 78% of those were human-caused.” [[Arizona Central, 4/25/2020](#)]

Wet Winter Conditions Are Predicted To Pave The Way For A Dry Summer “That Has The Potential To Become Disastrous.” According to Arizona Central, “Wet winter conditions will likely pave the way for a dry summer that has the potential to become disastrous. An abundance of moisture has already caused grasses to sprout up throughout the central region of Arizona and down throughout the Sonoran Desert.” [[Arizona Central, 4/25/2020](#)]

April 2020: Arizona Witnessed Its First Wildfires Of The Season, Which Burned Through 800 Acres Of Land In The Span Of A Few Days. According to Arizona Central, “There have already been a few small fires along Interstate 17 over the past few weekends. The first notable wildfire of the season — the Whitlow Fire — sprouted up near Superior, ripping through 800 acres in just a few days.” [[Arizona Central, 4/25/2020](#)]

Almost 2.9 Million People Living In Arizona, 45 Percent Of The State’s Population, Are At Elevated Risk Of Wildfire. According to States At Risk, “Almost 2.9 million people living in Arizona, or 45 percent of the state’s population, are at elevated risk of wildfire.” [[StatesAtRisk.Org, Accessed 5/1/2020](#)]

Recent Wildfire Seasons

2019 Fire Season

Summer – Fall 2019: Western Wildfires Caused \$1.2 Billion In Damages And Ten Deaths.

According to NOAA's National Centers for Environmental Information, Wildfires across the Western states, that impacted Arizona in the Summer and Fall of 2009, caused \$1.2 billion in damages and ten deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

Residual And Sustained Drought Conditions Across Western And South-Central States

Caused Thousands Of Wildfires. According to NOAA's National Centers for Environmental Information, "Residual and sustained drought conditions across western and south-central states resulted in thousands of wildfires." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

In 2019, 384,942 Acres Of Land Were Burned Due To Wildfire In Arizona.

According to the National Interagency Fire Center's 2019 report, 384,942 acres of land were burned in 1,869 fires across Arizona in 2019. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2019 Report](#)]

Cost Of One Northern Arizona Fire In 2019 Expected To Top \$13 Million.

In August of 2019, US News & World Report wrote: "The cost of fighting a wildfire that burned through a northern Arizona mountain pass and dealing with its aftermath is expected to top \$13 million. The U.S. Forest Service has spent about \$10 million so far on suppressing the fire that burned more than 3 square miles (nearly 8 square kilometers) of the Coconino National Forest in Flagstaff, agency spokesman Mark Thibideau said. The cost covers 700 personnel, aircraft and fuel for vehicles involved in the firefighting effort, among other things. The fire that started July 21 and prompted the evacuation of about two dozen homes was declared fully contained Aug. 15." [[US News & World Report, 8/22/2019](#)]

Arizona Was One Of Six States Most Affected By The Wildfires, Which Burned Over 5.9

Million Acres Nationally. According to NOAA's National Centers for Environmental Information, "Most affected states include CA, AZ, NM, TX, OK, and UT. National acreage burned exceeding 5.9 million. Over 200 homes and structures destroyed in the California 'Station' fire alone." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

2018 Fire Season

In 2018, 165,356 Acres Of Land Were Burned Due To Wildfire In Arizona.

According to the National Interagency Fire Center's 2018 report, 165,356 acres of land were burned in 2,000 fires across Arizona in 2018. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2018 Report](#)]

2017 Fire Season

Summer – Fall 2017: Western Wildfires And The California Firestorm Caused \$18.9 Billion In Damages And 54 Deaths. According to NOAA's National Centers for Environmental Information, Western Wildfires and the California Firestorm, which impacted Arizona in the Summer and Fall of 2017, caused \$18.9 billion in damages and 54 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

In 2017, 429,564 Acres Of Land Were Burned Due To Wildfire In Arizona. According to the National Interagency Fire Center's 2017 report, 429,564 acres of land were burned in 2,321 fires across Arizona in 2017. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2017 Report](#)]

2016 Fire Season

Summer – Fall 2016: Western/Southeastern Wildfires Caused \$2.6 Billion In Damages And 21 Deaths. According to NOAA's National Centers for Environmental Information, Western/Southeastern Wildfires that sparked in Arizona through the Summer and Fall of 2016 caused \$2.6 billion in damages and 21 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Western And Southern States Experienced An Active Wildfire Season, With Over 5 Million Acres Burned Nationally.** According to NOAA's National Centers for Environmental Information, "Western and Southern states experienced an active wildfire season with over 5.0 million acres burned nationally. Most notable was the firestorm that impacted Gatlinburg, Tennessee with hurricane-force wind gusts in extremely dry conditions creating volatile wildfire behavior. These wildfires destroyed nearly 2,500 structures and caused 14 fatalities. The drought conditions in many areas of the Southeast and California worsened the wildfire potential." [ndcd.noaa.gov, Accessed 4/30/2020]

2012 Fire Season

Summer – Fall 2012: Western Wildfires Caused \$2 Billion In Damages And Eight Deaths. According to NOAA's National Centers for Environmental Information, Western Wildfires, which impacted Arizona in the Summer and Fall of 2012, caused \$2 billion in damages and eight deaths. [ncdc.noaa.gov, Accessed 4/30/2020]

2011 Fire Season

Summer – Fall 2011: Texas, New Mexico And Arizona Wildfires Caused \$2.1 Billion In Damages And Five Deaths. According to NOAA's National Centers for Environmental Information, wildfires across Texas, Arizona and New Mexico in the Summer and Fall of

2011 caused \$2.1 billion in damages and five deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

- **Continued Drought And Periods Of Extreme Heat Sparked A Series Of Wildfires Across Texas, New Mexico And Arizona.** According to NOAA's National Centers for Environmental Information, "Continued drought conditions and periods of extreme heat provided conditions favorable for a series of historic wildfires across Texas, New Mexico and Arizona." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]
- **The Wallow Fire Consumed Over 500,000 Acres In Arizona, Making It The Largest Wildfire In The State's History.** According to NOAA's National Centers for Environmental Information, "The Bastrop Fire in Texas was the most destructive fire in Texas history destroying over 1,500 homes. The Wallow Fire consumed over 500,000 acres in Arizona making it the largest on record in Arizona. The Las Conchas Fire in New Mexico was also the state's largest wildfire on record scorching over 150,000 acres while threatening the Los Alamos National Laboratory. Over 3 million acres have burned across Texas this wildfire season." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

2009 Fire Season

Summer – Fall 2019: Western Wildfires Caused \$1.2 Billion In Damages And Ten Deaths. According to NOAA's National Centers for Environmental Information, Wildfires across the Western states, that impacted Arizona in the Summer and Fall of 2009, caused \$1.2 billion in damages and ten deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

- **Residual And Sustained Drought Conditions Across Western And South-Central States Caused Thousands Of Wildfires.** According to NOAA's National Centers for Environmental Information, "Residual and sustained drought conditions across western and south-central states resulted in thousands of wildfires." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]
- **Arizona Was One Of Six States Most Affected By The Wildfires, Which Burned Over 5.9 Million Acres Nationally.** According to NOAA's National Centers for Environmental Information, "Most affected states include CA, AZ, NM, TX, OK, and UT. National acreage burned exceeding 5.9 million. Over 200 homes and structures destroyed in the California 'Station' fire alone." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

DROUGHT

Link To Climate Change

NASA Research Showed Human Activity Has Been Influencing Global Patterns Of Drought, With Increased Drought Occurring In Response To Greenhouse Gas Emissions. According to NASA, "Warming temperatures and changing precipitation patterns can lead to

droughts, and NASA research shows that humans have been influencing global patterns of drought for nearly a century. Kate Marvel and Ben Cook, researchers at NASA's Goddard Institute for Space Studies and Columbia University in New York City, investigated humans' influence on 20th-century drought patterns using historical weather data and drought maps calculated from tree rings. They found that a data 'fingerprint' – a drying and wetting pattern predicted to occur in response to greenhouse gas emissions – was visible as far back as the early 1900s." [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Climate Change Is Already Affecting Global Patterns Of Drought, And Such Trends Are Expected To Continue. According to NASA, "Demonstrating that humans influenced global drought patterns in the past is an important part of understanding how we may influence them in the future, said Cook. 'Climate change is not just a future problem,' he said. 'This shows it's already affecting global patterns of drought, hydroclimate, trends, variability — it's happening now. And we expect these trends to continue, as long as we keep warming the world.'" [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Longer And More Intense Droughts Are Expected In The Future Due To Climate Change, With The U.S. Southwest Potentially Experiencing 'Megadroughts' Lasting More Than Three Decades. According to NASA, "Demonstrating climate models' ability to accurately depict past droughts, helps to confirm their ability to model future droughts as well. Other research of Cook's shows that if greenhouse gas emissions continue to increase along current trajectories, the U.S. Southwest could see 'megadroughts' lasting more than three decades. Cook and his team ran 17 different climate models, and all of them agree that there are likely to be longer and more intense droughts in the future." [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

The Weather Channel HEADLINE: Climate Change Is Stoking What May Be A Long-Term Megadrought In Western U.S. [[The Weather Channel, 4/16/2020](https://www.weather.com/news/4/16/2020)]

Recent Drought Disasters

2018 Drought Impacts

Summer – Fall 2018: Drought Across The Southwest And Southern Plains Caused \$3.1 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, drought across the Southwest and Southern Plains, which impacted Arizona in the Summer and Fall of 2018, caused \$3.1 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://ndcd.noaa.gov/4/30/2020)]

- **Arizona Was One Of Four States Where The Most Extreme Drought Conditions Continued To Persist.** According to NOAA's National Centers for Environmental Information, "Drought conditions were present across numerous Southwestern and Plains states (TX, OK, KS, MO, CO, NM, AZ, UT). The most extreme drought conditions continue to persist across the Four Corners region of the Southwest." [[ndcd.noaa.gov, Accessed 4/30/2020](https://ndcd.noaa.gov/4/30/2020)]

- **The Agriculture Sector Across Impacted States Saw Damage To Field Crops From Lack Of Rainfall.** According to NOAA's National Centers for Environmental Information, "The agriculture sector has been impacted across the affected states including damage to field crops from lack of rainfall. Ranchers have also be forced to sell-off livestock early in some regions due to high feeding costs." [ndcd.noaa.gov, Accessed 4/30/2020]

2015 Drought Impacts

2015: Western Drought Caused \$5 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, drought across Western and Southern states in 2015, which impacted Arizona, caused \$5 billion in damages and zero deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Arizona Experienced Drought Conditions That Impacted The Agriculture Sector And Increased Wildfire Conditions.** According to NOAA's National Centers for Environmental Information, "Drought conditions were present across numerous western states (CA, NV, OR, WA, ID, MT, UT, AZ) with the most severe conditions continuing to plague California for all of 2015. The agriculture sector was again impacted by a lack of rainfall resulting in hundreds of thousands of acres of farmland remaining fallow and requiring excess groundwater pumping to irrigate existing agriculture interests. Wildfire conditions were further enhanced by the ongoing drought. California experienced extensive damage from both drought and wildfire impacts. Drought conditions did improve dramatically across Texas and Oklahoma, in the form of several major flood events." [ndcd.noaa.gov, Accessed 4/30/2020]

2014 Drought Impacts

2014: Western Drought Caused \$4.4 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, drought across the Western U.S. in 2014, which impacted Arizona, caused \$4.4 billion in damages and zero deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

2013 Drought Impacts

Spring – Fall 2013: Drought And Heatwaves Across The West And Great Plains Caused \$11.7 Billion In Damages And 53 Deaths. According to NOAA's National Centers for Environmental Information, drought and heatwaves across the Western and Great Plains states, which hit Arizona in Spring and Fall of 2013, caused \$11.7 billion in damages and 53 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Arizona Was One Of 22 States That Experienced Moderate To Extreme Drought.** According to NOAA's National Centers for Environmental Information, "The 2013 drought slowly dissipated from the historic levels of the 2012 drought, as conditions improved across many Midwestern and Plains states. However, moderate to extreme drought did remain or expand into western states (AZ, CA, CO, IA, ID, IL, KS, MI, MN, MO, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WI, WY). In comparison to 2011 and 2012 drought conditions the US experienced only moderate crop losses across the central agriculture states." [ndcd.noaa.gov, Accessed 4/30/2020]

2012 Drought Impacts

2012: Nationwide Droughts And Heatwaves Caused \$34.2 Billion In Damages And 123 Deaths. According to NOAA's National Centers for Environmental Information, drought and heatwaves across the U.S. in 2012 caused \$34.2 billion in damages and 123 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **The 2012 Drought Impacted Over Half Of The U.S., Including Arizona, And Was The Most Extensive Drought In America Since The 1930s.** According to NOAA's National Centers for Environmental Information, "The 2012 drought is the most extensive drought to affect the U.S. since the 1930s. Moderate to extreme drought conditions affected more than half the country for a majority of 2012. The following states were affected: CA, NV, ID, MT, WY, UT, CO, AZ, NM, TX, ND, SD, NE, KS, OK, AR, MO, IA, MN, IL, IN, GA. Costly drought impacts occurred across the central agriculture states resulting in widespread harvest failure for corn, sorghum and soybean crops, among others. The associated summer heatwave also caused 123 direct deaths, but an estimate of the excess mortality due to heat stress is still unknown." [ndcd.noaa.gov, Accessed 4/30/2020]

MILITARY BASES AFFECTED BY CLIMATE CHANGE

The Hardest-Hit Base For US Servicemembers Exposed To Extreme Temperatures Will Be In Arizona. In November of 2019, Arizona Public Media reported: "Over the next three decades, military bases in the contiguous U.S. could, on average, experience an extra month of dangerously hot days, according to a new study. The hardest hit base will be right here in Arizona. According to the Pentagon, more than 90% of heat-related illnesses among U.S. service members occur within the U.S. Barring significant action, that's likely to get worse, says a new analysis by the Union of Concerned Scientists." [[Arizona Public Media](https://www.azpublicmedia.com), 9/14/2019]

- **Marine Corps Air Station In Yuma Projected Is To Experience 117 Days Over 100 Degrees.** In a story reporting on a study by the Union of Concerned Scientists about the impact of extreme heat on U.S. service members serving on bases at home, Arizona Public Media reported: "By midcentury, the Marine Corps Air Station in Yuma will experience 117 days above a 100 degree Fahrenheit heat index." [[Arizona Public Media](https://www.azpublicmedia.com), 9/14/2019]
- **Luke Air Force Base Is Projected To Experience 112 Days Over 100 Degrees.** In a story reporting on a study by the Union of Concerned Scientists about the impact of extreme heat on U.S. service members serving on bases at home, Arizona Public Media reported: "Those days will almost double at Luke Air Force Base, from 63 to 112, while Davis-Monthan Air Force Base will see an eight-fold increase, from eight to 64." [[Arizona Public Media](https://www.azpublicmedia.com), 9/14/2019]
- **Tucson International Airport Air Guard Station Is Projected To Experience 76 Days Over 100 Degrees.** In a story reporting on a study by the Union of Concerned Scientists about the impact of extreme heat on U.S. service members serving on bases at home,

Arizona Public Media reported: "The Tucson International Airport Air Guard Station will surge from 14 to 76 dangerously hot days, while Fort Huachuca will merely tick upwards from zero to 10." [[Arizona Public Media, 9/14/2019](#)]

TRUMP'S CLIMATE DENIAL HURTS ARIZONA'S ECONOMY

GDP IMPACT

Climate Change Will Cost Arizona \$17,368,290,000 A Year By The Year 2100. According to data on the impacts of climate change as part of a study published in Science Magazine, Arizona can expect to lose \$17,368,290,000 from annual GDP by the year 2100 if action isn't taken to immediately curtail carbon emissions. The study used a model that aimed to calculate the future impact on each state's gross domestic product (GDP) from events including hurricanes, storm surges, changes in agricultural yields, changing electricity demands, changes in mortality rates, changes to the labor supply, rising sea levels and rising crime rates. [[Hsiang, S., Kopp, R.E., et al. "Estimating economic damage from climate change in the United States" Science Magazine, 6/30/2017, MarketWatch, 4/30/2018](#)]

Arizona Expected To Suffer Worse Than The Rest Of The Country Under Climate Change, Costing 8% Of GDP In Maricopa County Alone. In June of 2017, the Arizona Republic reported: "Phoenix and most of Arizona will suffer more deaths and economic losses than most of the country under current climate change projections, according to a study to be published in the journal Science this week. The warming expected by the end of the century under the world's existing energy use trajectory would cost Maricopa County about 8 percent of its economic production, the researchers found. The cost includes losses associated with hundreds more deaths each year." [[Arizona Republic, 6/29/2017](#)]

Headline: "Arizona Will Suffer More Than Most Of U.S. As Climate Changes, Study Says" [[Arizona Republic, 6/29/2017](#)]

Data from the study referenced in the article above shows almost all Arizona counties would suffer higher rates of death, higher energy costs, and significant overall economic damages as a result of climate change:

County Name	Mortality (deaths per 100k)	Energy Expenditures (%)	Total damages (%)
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			county income)
Apache County	-8.11	2.47	-0.11
Cochise County	25.08	16.10	8.52
Coconino	-6.91	0.46	-0.27
Gila County	47.16	16.88	15.14
Graham County	25.16	13.35	11.29
Greenlee	2.81	7.79	3.54
La Paz County	34.57	17.91	12.59
Maricopa	27.45	18.55	7.76
Mohave County	41.22	16.42	16.95
Navajo County	5.93	10.31	5.61
Pima County	31.31	13.61	9.58
Pinal County	26.89	17.24	12.21
Santa Cruz	10.82	11.46	7.19
Yavapai County	5.52	10.18	4.10
Yuma County	22.99	17.67	9.46

Data is presented as change in annual metrics between the years 2012 and 2100 under the RCP 8.5 “business as usual” scenario that projects changes to the climate if no significant action is taken to address carbon pollution.

Source: [Hsiang, S., Kopp, R.E., et al \(2017\). Estimating economic damage from climate change in the United States.](#)

AGRICULTURE

Climate Change Is Projected To Cause A 37% Loss In Crop Yields In Arizona, Including A 69% Loss In Cotton Production. According to data on the impacts of climate change as part of a study published in Science Magazine, Arizona can expect to see a 37% loss in total value of agricultural crop yields by the late in the century (2080-2100) if action isn’t taken to immediately curtail carbon emissions. This includes an 18.97% increase in grain production, but is offset by a 69.2% loss in cotton production. The study used a model that aimed to calculate the future impact on agricultural yields on GDP. [[Hsiang, S., Kopp, R.E., et al, "Estimating economic damage from climate change in the United States" Science Magazine, 6/30/2017 \(data files via Zenodo\)](#)]

Arizona’s Agriculture Industry Generated \$23.3 Billion And Employed 138,000 People. According to a December 2018 message from Arizona Governor Douglas A Ducey “From seed funding to sustainable growth, every economy has its roots in agriculture. The importance of agriculture and its contributions to the citizens and the state of Arizona cannot be overlooked. Agriculture is estimated to be a \$23.3 billion industry, resulting in the creation of 138,000 jobs. Representing three of Arizona’s “5 C’s” – cattle, citrus and cotton – agriculture is a fountain of economic opportunity for tens of thousands of

Arizonans and a source of sustenance for millions more.” [[Arizona Department of Agriculture “Guide to Arizona Agriculture” December 2018](#)]

TOURISM & OUTDOOR RECREATION

Arizona’s Tourism Sector Employs 192,300 People And Generated \$24.4 Billion In Spending In 2018. According to data reported by the Arizona Office of Tourism, Arizona’s tourism industry generated \$24.4 billion in direct travel spending within Arizona and 192,300 industry-related jobs were directly generated by visitor spending. [[Arizona Office of Tourism 2019 Industry Performance Report](#)]

Outdoor Recreation In Arizona Supports 201,000 Jobs And \$21.2 Billion In Consumer Spending. According to data collected by the Outdoor Industry Association, outdoor recreation in Arizona supports 201,000 direct jobs and generates \$5.7 billion in wages and salaries. Outdoor recreation generates \$21.2 billion in consumer spending for the state, which brings in \$1.4 billion in state and local tax revenue. [[Outdoor Industry Association accessed 6/9/2020](#)]

ECONOMIC COST OF TRUMP’S CLEAN CARS ROLLBACK

Trump’s Clean Cars Rollback Will Cost Arizonans Over \$404 Million Per Year. In March of 2019, the Center for American Progress analyzed the costs of some of Donald Trump’s regulatory changes. For Trump’s rollback of clean cars standards, they combined data from M.J. Bradley and Associates’ analysis of the net cost for American families of freezing fuel economy targets at model-year 2020 along with data from the Energy Information Agency’s oil price forecasts as well as the American Community Survey. The analysis found that Trump’s rollback of clean cars standards will cost Arizonans \$404,100,000 per year. [[Center for American Progress, 3/27/2019](#)]

SPENDING ON DISASTERS

In The Past Decade, Arizona Has Experienced 11 Climate-Related Disasters Responsible For Over 89.7 Billion Dollars’ Worth Of Damages. According to NOAA’s National Centers for Environmental Information, Arizona experienced 11 climate-related disasters that were responsible for over a billion dollars’ worth of damages each and a combined total of \$89.7 billion. These 11 disasters that occurred between 2009 and 2019 include five wildfires, five droughts, and one severe storm. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

Since Trump Assumed The Office Of The Presidency, Arizona Has Experienced Two Climate-Related Disasters Responsible For Over 22 Billion Dollars’ Worth Of Damages. According to NOAA’s National Centers for Environmental Information,

since President Trump assumed office in 2017, Arizona has experienced two climate-related disasters responsible for over a billion dollars' worth of damages each and a combined total of \$22 billion. These two climate-related disasters include one drought and one wildfire. [ndcd.noaa.gov, Accessed 4/30/2020]

2019: FEMA Obligated \$555,140 To Arizona Following Severe Storms. According to data from the Federal Emergency Management Agency, Arizona was obligated \$555,140 in 2019 following severe storms. [[FEMA.Gov](https://www.fema.gov), Accessed 5/21/2020]

TRUMP'S CLIMATE DENIAL IS ESPECIALLY HARMFUL TO PEOPLE OF COLOR IN ARIZONA

EXTREME HEAT

Study Analyzed The Impact Of Racist Exclusionary Housing Practices And Found Neighborhoods In Formerly Redlined Areas Are Subject To Hotter Temperatures. “While a growing body of evidence describes the intra-urban variation of temperatures due to characteristics of the built environment, few have asked why we observe a pattern of historically-marginalized communities living in the hottest areas. Here we have presented results from an analysis of 108 US cities that aimed to examine the role of historic ‘redlining’ policies in mediating exposure to intra-urban heat. We found that in nearly all cases, those neighborhoods located in formerly redlined areas—that remain predominantly lower income and communities of color—are at present hotter than their non-redlined counterparts. Although the extent of differences in temperatures varies by region, the preponderance of evidence establishes that those experiencing the greatest exposure to present and potentially future extreme heat are living in neighborhoods with the least social and ecosystem services historically.” [[Hoffman, J.S.; Shandas, V.; Pendleton, N. The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas. Climate 2020](#)]

CDC: African Americans Had Higher Death Rates From Heat Related Illness. According to the CDC, “During 1999–2005, a total of 3,981 heat-related deaths were reported, resulting in approximately 569 heat-related deaths per year in the United States. Older adults and young children are particularly susceptible to heat-related illnesses and are at high risk for heat-related mortality. Black or African American males had a higher crude rate for heat-related deaths than any other race, across all age groups.” [CDC, Preparedness and Response for Public Health Disasters, accessed [6/24/15](#)]

National Climate Assessment: Climate Change Would Amplify Existing Health Threats In Communities Of Color. According to the 2014 National Climate Assessment, “Climate change will, absent other changes, amplify some of the existing health threats the nation now faces. Certain people and communities are especially vulnerable, including children, the elderly, the sick, the poor, and some communities of color.” [National Climate Assessment, [2014](#)]

- **National Climate Assessment: Minorities Would Be More Vulnerable To Impacts Of Devastating Heat Waves Caused By Climate Change.** According to the 2014 National Climate Assessment, “Vulnerability to heat waves is not evenly distributed throughout urban areas; outdoor versus indoor air temperatures, air quality, baseline health, and

access to air conditioning are all dependent on socioeconomic factors. Socioeconomic factors that tend to increase vulnerability to such hazards include race and ethnicity (being a minority), age (the elderly and children), gender (female), socioeconomic status (low income, status, or poverty), and education (low educational attainment). The condition of human settlements (type of housing and construction, infrastructure, and access to lifelines) and the built environment are also important determinants of socioeconomic vulnerability, especially given the fact that these characteristics influence potential economic losses, injuries, and mortality." [National Climate Assessment, [2014](#)]

OZONE & ASTHMA

Five Arizona Counties Received F Grades For Ozone Pollution. According to the American Lung Association's annual State of the Air report in 2019, Gila, Maricopa, Pima, Pinal, and Yuma counties all received a grade of F grade for having high ozone days. [[American Lung Association State of the Air Report Card: Arizona, 2020](#)]

American Lung Association Report Found Phoenix & Tucson "Heavily Impacted By Unhealthy Ozone And Particle Pollution." On April 21, 2020, the American Lung Association issued a press release announcing: "The American Lung Association's 2020 "State of the Air" report found Phoenix ranked among the nation's worst cities for widespread air pollutants—ozone and particulates—both of which can be deadly. Both Phoenix and Tucson are heavily impacted by unhealthy ozone and particle pollution and, in fact, the Phoenix metro area ranks in the top 10 in these categories with the Tucson metro area also worsening in all categories." [[American Lung Association, 4/21/2020](#)]

- **Asthma and Allergy Foundation: "Ozone Triggers Asthma."** According to the Asthma and Allergy Foundation of America, "Ozone, a gas, is one of the most common air pollutants. Ozone contributes to what we typically experience as "smog" or haze. It is most common in cities where there are more cars. It is also more common in the summer when there is more sunlight and low winds. Ozone triggers asthma because it is very irritating to the lungs and airways. It is well known that ozone concentration is directly related to asthma attacks. It has also caused the need for more doses of asthma drugs and emergency treatment for asthma. Ozone can reduce lung function. Ozone can make it more difficult for you to breathe deeply." [[Asthma and Allergy Foundation of America, October 2015](#)]
- **African American Children Were Four Times More Likely To Be Admitted To The Hospital And Ten Times More Likely To Die From Asthma.** According to the Department of Health and Human Services, "In 2015, African American children had a death rate ten times that of non-Hispanic white children. Black children are 4 times more likely to be admitted to the hospital for asthma, as compared to non-Hispanic white children. [Department of Health and Human Services, Accessed [9/7/18](#)]

ROSEMONT COPPER MINE

Native Americans Are Fighting The Construction Of A Copper Mine Near Tucson, AZ.

According to Associated Press: "The Milepost 44 pullout offers a panorama of the range in the Coronado National Forest where a Canadian firm wants to carve out a massive copper mine near Tucson. The \$1.9 billion Rosemont Mine, at a half-mile deep and a mile wide, would sprawl across federal, state and private land, leaving a waste pile the height of skyscraper." [[Associated Press, 5/19/2019](#)]

Tribes And Environmental Groups Say The Mine Could Destroy Sacred Lands, Dry Up Waterways, And Disrupt The Habitat Of Endangered Species. According to Associated Press: "Native American tribes and environmental groups have sued to stop Hudbay Minerals Inc. of Toronto, arguing its mine could desecrate sacred, ancestral lands and dry up wells and waterways while ravaging habitat for endangered jaguar and other species. Last week, they asked a federal judge to prevent the project from proceeding until the lawsuits are decided." [[Associated Press, 5/19/2019](#)]

Tribal And Environmental Groups Say The Army Corps Of Engineers Failed To Consider The Impact Of Polluted Runoff And Seepage In Canyons Downstream When Approving The Mine's Clean Water Act Permit. According to Arizona Central: "The Army Corps of Engineers cleared the way for construction to begin in a March 8 decision when it approved a Clean Water Act permit for the mine. [...] Save the Scenic Santa Ritas sued in federal court along with three other environmental groups — the Center for Biological Diversity, Sierra Club and Arizona Mining Reform Coalition — after the Army Corps of Engineers issued the permit for the mine. The groups argue in the lawsuit that the Corps refused to consider the effects of polluted runoff and seepage in canyons downstream and that the mine would cause 'severe and permanent' harm to springs, creeks and wildlife habitat." [[Arizona Central, 5/5/2019](#)]

The Corps. Previously Denied The Mine's Permit In 2016, Noting Its Construction Would Harm The State's Water Quality. According to Arizona Central: "The Army Corps' Los Angeles district had recommended in 2016 that the company's permit application be denied. A document detailing the Corps' final decision said the agency's division engineer had informed the company in a December 2016 letter of the district office's conclusions that granting the permit would 'cause or contribute to violations of state water quality standards,' would 'result in significant degradation of waters of the U.S.,' and 'would be contrary to the public interest.'" [[Arizona Central, 5/5/2019](#)]

PHOENIX AIR POLLUTION

Poorer And Predominately Minority Areas Of South And West Phoenix Have Worse Air Quality Than Other Areas Of The City. According to Arizona Central: "Air pollution exposure

is closely linked to race and socioeconomic status. The north and northeast parts of metro Phoenix tend to be wealthier and whiter, with better air quality. The southern and western part of Phoenix tends to be poorer, predominantly minorities and has worse air quality, according to soon-to-be-published research by Darshan Karwat, an aerospace engineer and assistant professor in the School for the Future of Innovation in Society and the Polytechnic School at Arizona State University." [\[Arizona Central, 12/31/2019\]](#)

Residents In Phoenix's Heavily Polluted Neighborhoods In The South And West Of The City Are Primarily Latino Or African-American. According to KJZZ: "'Maricopa County is actually one of the most contaminated counties in the country,' said Laura Dent, executive director of Chispa, a Latino-focused environmental organization. All of Maricopa County experiences air pollution. But busier streets and topography that causes pollution to settle contribute to even dirtier air in south and west Phoenix. And residents of those heavily polluted neighborhoods are primarily Latino or African American. 'Latinos and communities of color, in Arizona, but across the country are disproportionately impacted by respiratory issues related to contamination and pollution and there's so much history that leads to that,' Dent said." [\[KJZZ, 4/27/2020\]](#)

South And West Phoenix Is Home To The City's Railroads, Major Highways, Sky Harbor Airport, And Industrial Factories. According to Arizona Central: "When the railroad was built in southern Phoenix, factories sprouted near the tracks and people of color lived nearby for work, as they were barred from other economic opportunity because of racist policies. Depression-era districting and zoning laws kept land values low in south Phoenix, allowing more industry to move in. After World War II, people of color were denied federal loan programs for low-interest mortgages. Thus, white people were able to move north, away from the factories, creating a growing suburban middle class in the northeast of the city, according to a paper published by Arizona State University researchers in 2005. In the 1960s, the freeway system was built parallel to the railroad corridor, followed by the construction and later expansion of Sky Harbor airport in the 1970s and 1980s. The environmental justice movement, which began in the 1980s, brought many of these issues to light as local activists protested for their rights. Today, the legacy of that history remains." [\[Arizona Central, 12/31/2019\]](#)

Asthma Rates In South And West Phoenix Zip Codes Are Some Of The Highest In The Country. According to Arizona Central: "Asthma rates are some of the highest in the county in south and west Phoenix zip codes, according to 2017 data from the Maricopa County Department of Public Health." [\[Arizona Central, 12/31/2019\]](#)

TOXIC GROUNDWATER

Toxic Chemicals Have Tainted The Groundwater Under A Large Swath Of Phoenix For Decades. According to Arizona Central: "The water beneath a large swath of Phoenix isn't fit to drink. A plume of toxic chemicals has tainted the groundwater for decades, and it's

now at the center of a bitter fight over how the aquifer should be cleaned up and what should happen to the water in the future." [\[Arizona Central, 8/20/2019\]](#)

The Plume Of Contaminated Groundwater Is Part Of A Larger Polluted Zone Across Central And West Phoenix. According to Arizona Central: "The plume of contaminated groundwater, called the West Van Buren site, has been on Arizona's priority list of toxic cleanup sites since 1987. It's part of a larger polluted zone that stretches across 15 miles of central and west Phoenix, and state officials are seeking to have portions of the site added to a federal cleanup effort." [\[Arizona Central, 8/20/2019\]](#)

Neighborhoods In West Phoenix Have Predominately Latino And African-American Populations. According to KJZZ: "All of Maricopa County experiences air pollution. But busier streets and topography that causes pollution to settle contribute to even dirtier air in south and west Phoenix. And residents of those heavily polluted neighborhoods are primarily Latino or African American." [\[KJZZ, 4/27/2020\]](#)

Chemicals Linked To Cancers, Lymphoma, And Other Health Problems Have Shown To Be As Groundwater Flows Into The City's Canal System. According to Arizona Central: "Tests have shown that, as the water gushes into the canal system, it releases measurable amounts of trichloroethylene (TCE) and tetrachloroethylene (PCE) into the air. These volatile organic compounds, or VOCs, quickly become airborne once the water is flowing through the canals. The latest measurements of the chemicals released into the air were collected during a study in 2011. Since then, no additional air samples have been taken in the area to track the levels of the chemicals in the air. The carcinogen TCE is linked to kidney cancer, liver cancer and lymphoma, and studies have found harmful effects on the immune system and the nervous system, and risks of heart defects in developing fetuses. The federal government classifies PCE as a likely carcinogen, and studies show it can harm the nervous system, vision, the liver, kidneys and immune system." [\[Arizona Central, 8/20/2019\]](#)

Tests Of Groundwater Show Some Wells Containing TCE And PCE Chemicals At Levels Above Safe Drinking Water Standards. According to Arizona Central: "Tests of the groundwater in the West Van Buren site have shown some wells contain TCE and PCE at levels above safe drinking water standards. But more than three decades after the problem was discovered, environmental regulators still haven't settled on financial responsibility for the cleanup among 'potentially responsible parties.'" [\[Arizona Central, 8/20/2019\]](#)

ARIZONA HAS AN OPPORTUNITY TO BUILD A STRONG GREEN ECONOMY

ARIZONA'S GREEN ECONOMY

Arizona Was Ranked 19th For Clean Energy Jobs In 2019, With The Sector Supporting 62,106 Jobs. According to the 2020 Clean Jobs America Report by E2, Arizona was ranked 19th in clean energy employment in 2019, with the clean energy sector providing 62,106 jobs. [[Clean Jobs America Report, E2, 2020](#)]

SOLAR

NOAA: Three Of The Top Five Sunniest Cities Are Yuma, Phoenix, And Tucson, AZ.

According to a ranking of cities based on % annual possible sunshine compiled by the National Oceanographic and Atmospheric Administration, the five sunniest cities are (in descending order): Yuma, AZ; Redding, CA; Las Vegas, NV; Phoenix, AZ; and Tucson, AZ. [[NOAA accessed 5/25/2020](#)]

New Yorker Headline: "The Battle For Solar Energy In The Country's Sunniest State." In October of 2018, The New Yorker reported: "Arizona is the sunniest state in the country, with more than three hundred bluebird days per year. It is also projected to endure an additional month of hundred-degree days in the coming decades owing to climate change. Yet, despite the rapid decline in the cost of solar-energy technology and battery storage—to the point that, as an A.P.S. director told me, it now frequently outbids fossil fuels, even natural gas—in 2017, Arizona generated only six per cent of its electricity from solar, according to the ballot initiative's advocates." [[New Yorker, 10/24/2018](#)]

2019: Arizona Was Home To 7,777 Jobs In The Solar Industry. According to The Solar Foundation, in 2019 there were 7,777 solar jobs in Arizona and the state was ranked seventh in the nation for solar jobs. [[The Solar Foundation, Solar Jobs Census 2019: Arizona](#), Accessed 4/29/2020]

2019: There Were 473 Solar Companies In Arizona According to The Solar Foundation, in 2019 there were 473 total solar companies in Arizona. [[The Solar Foundation, Solar Jobs Census 2019: Arizona](#), Accessed 4/29/2020]

2019: 778,431 Equivalent Homes Were Powered By Solar In Arizona. According to The Solar Foundation, in 2019 the number of equivalent homes powered by solar in Arizona stood at 778,431. [[The Solar Foundation, Solar Jobs Census 2019: Arizona](#), Accessed 4/29/2020]

90 Percent Of Arizona Rooftops Are “Technically Viable” To Hold Solar —

Google. According to E&E News, “The technology giant expanded its ‘Project Sunroof’ program into all 50 states this month and found that nearly 80 percent of rooftops it assessed around the country are suitable for solar power. That doesn’t mean those 60 million buildings are likely to adopt panels — only that they technically can, according to Google. ... Overall, Google ranked Houston at the top of U.S. cities, with 18,940 gigawatt-hours of annual solar generation potential. Los Angeles; Phoenix; San Antonio; New York; San Diego; Jacksonville, Fla.; Oklahoma City; Dallas; and Albuquerque, N.M., round out the top 10. ‘If the top ten cities reached their full rooftop solar potential, they’d produce enough energy to power 8 million homes,’ Google said in a statement. More than 60 percent of rooftops in states not known for being sunny, like Minnesota and Maine, are suitable for solar, according to the data. Ninety percent of homes in Hawaii, Arizona and Nevada are ‘technically viable,’ Google said.” [E&E News, [3/23/17](#)]

WIND

2019: Arizona Was Home To 1,001 To 2,000 Direct Jobs In The Wind Industry. According to American Wind Energy Association, in 2019 the wind industry supplied 1,001 to 2,000 direct jobs in Arizona. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Arizona, April 2020](#)]

2019: There Were 7 Wind Energy Manufacturing Facilities In Arizona. According to American Wind Energy Association, in 2019 there were 7 active manufacturing facilities in Arizona. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Arizona, April 2020](#)]

2019: There Were 144 Wind Turbines In Arizona. According to American Wind Energy Association, in 2019 Arizona was home to 452 wind turbines. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Arizona, April 2020](#)]

2019: The Equivalent Number Of Homes Powered By Wind In Arizona Was 51,100. According to American Wind Energy Association, the equivalent number of homes powered by wind in Arizona in 2019 was 51,100. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Arizona, April 2020](#)]