



# How will climate change impact telecommunications & data center companies?

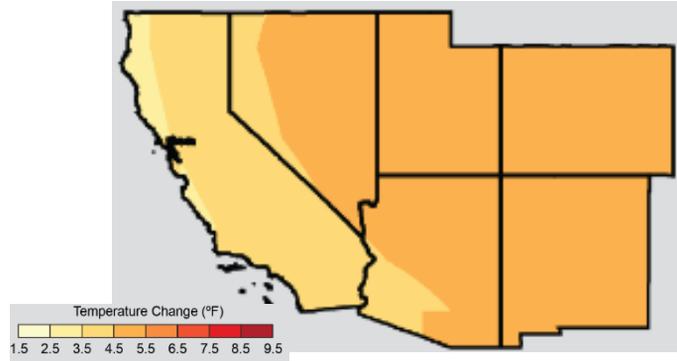
Arizona, California, Colorado, Nevada, New Mexico, and Utah

From extreme storms to incremental, telecommunication and data center companies are already feeling the impact of a changing climate. These impacts threaten to disrupt their supply chains and operations as well as cause costly damage to assets and infrastructure of companies in both sectors. This fact sheet offers some first steps toward increasing companies' resilience to climate change in the Southwest.

## southwest

**Climate is changing and impacts on telecoms and data centers are already being felt.** Some companies are already reacting to build the resilience of their facilities in the face of changing environmental conditions.

In the Southwest, **increased heat, wildfires, drought, and insect outbreaks** are all linked to climate change. Flooding and erosion is expected to pose an increasingly large problem in coastal areas.



Annual average temperatures are forecasted to rise significantly by 2041. This map shows how average temperatures are forecast to rise, as compared to averages from 1971-1999, in the Southwest region (NCA 2014).

The Southwest is the hottest and driest region in the country, where the availability of water has defined its landscape and socio-economy. **Temperatures are expected to keep increasing**, making the region hotter and, in the southern half, drier. Disruptions to urban electricity and water supplies will have serious impacts on communications and data center services.

## case study

Persistent drought, linked to climate change, is already occurring in parts of the Southwest, threatening water supplies that are essential for cooling data centers, and companies are employing strategies to address this. For example, Google is already implementing techniques to increase its water efficiency, such as using recycled water and by employing evaporative cooling. Two of their data centers are already entirely cooled by recycled water, while another is cooled by captured rainwater. Google's cooling towers also take advantage of the water that runs through their data centers, which, through evaporation, allows the use of 'free cooling' provided by the local climate. To learn more about what Google is doing to increase its resilience, visit: <http://www.google.com/about/datacenters/efficiency/internal/#water-and-cooling>

## global companies need resilient supply chains



The supply chains supporting telecoms and data centers are complex and face a wide range of potential impacts from climate change. Complexity means that climate impacts to one part of the supply chain in one region of the world can have consequences for other parts of the supply chain in other regions. Companies need to look for climate risks in each tier of their supply chain.

# Climate risks for telecommunications and data centers

# southwest

climate factors	potential impacts
Increases in maximum temperature	<ul style="list-style-type: none"><li>Higher frequency, duration, and intensity of heat waves create additional burdens on keeping equipment cool in data exchanges and base stations, resulting in increased failure rates</li><li>Increased energy demand during heat waves can result in power outages, affecting the delivery of telecoms services and increasing the cost of energy</li></ul>
Reduced winter and spring precipitation	<ul style="list-style-type: none"><li>Decreased precipitation may increase seasonal water scarcity, reducing the amount of water available for cooling</li><li>More severe water rationing in different states during droughts (for example, as already exists in California)</li></ul>
Increased frequency of extreme events	<ul style="list-style-type: none"><li>Increases the risk of damage to above-ground transmission infrastructure (masts, antennae, switch boxes, aerials, overhead wires, and cables), which are often final access connections to homes and businesses, and may negatively impact telecommunications service delivery</li></ul>
Sea level rise	<ul style="list-style-type: none"><li>Increases in storm surges increase the risk of saline corrosion of coastal telecommunications infrastructure</li><li>Leads to erosion or inundation of coastal and underground infrastructure</li></ul>

## determine adaptive capacity

Use this checklist to start assessing how resilient your business is to less predictable weather and a changing climate.

- ✓ What backups and contingencies do you have in place to protect vital assets or operations?
- ✓ What financial options do you have in place that allow you to rebound from disruptions or change?
- ✓ How have past disruptions or extreme events impacted your business?
- ✓ Do critical tiers of your supply chain have redundancies in place to serve as backups?
- ✓ What are your business planning time frames?
- ✓ What shared infrastructure do you have?
- ✓ What is the rate of technological development and what are infrastructure lifespans? Shorter lifespans provide flexibility to respond quickly to changes in climate.

## assess response strategies

There are many ways to build resilience. Here are some initial responses to consider.

- *Explore ways to increase water efficiency or identify new water sources for cooling data centers*
- *Decouple communication infrastructure from the electric grid where possible, for example, with microgrids.*
- *Relocate or fortify critical telecom assets such as terminals, cell towers, power facilities, or central offices out of coastal areas threatened by sea level rise or storm surges.*
- *Identify resilient energy synergies.* Energy efficiency strategies not only reduce emissions but also lower your dependency on the electricity grid, which can suffer due to increased energy demand during heat waves and storm damage.

## learn more

The full report, *Climate Risks Study for Telecommunications and Data Center Services*, is available at [www.sftool.gov](http://www.sftool.gov)

The National Climate Assessment has more figures and details about climate change in your region at [nca2014.globalchange.gov](http://nca2014.globalchange.gov)

Questions? Please email [adaptation@gsa.gov](mailto:adaptation@gsa.gov) or visit [www.gsa.gov/climateadaptation](http://www.gsa.gov/climateadaptation)

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