



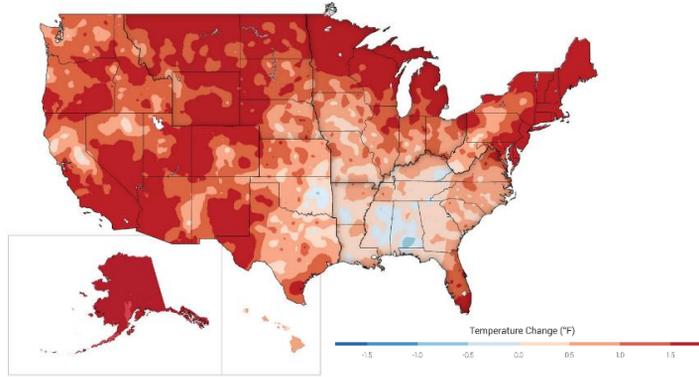
# How will climate change impact telecommunications & data center companies?

# united states

From extreme storms to incremental changes, 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 United States.

**Changing conditions increase operating costs and customer dissatisfaction.** In all areas of the United States, rising temperatures will change how data centers are cooled and will affect the efficiency of telecom transmission networks. In other areas, ice storms threaten infrastructure.

**Extreme weather disrupts vital communications when governments, citizens, and companies need it most,** putting national security and human welfare, and business value, at risk. As more customers telework during these disruptions, telecom systems need to be prepared to handle increased loads.



Temperatures are already rising across the United States. This map shows changes in average annual temperature between 1991-2012, compared to the 1901-1960 average for the continental US, and compared to the 1951-1980 average for Alaska and Hawaii (NCA 2014)

**Temperatures and the frequency and intensity of extreme rain events are already increasing across the United States.** In the future, heat waves, heavy downpours, and sea level rise will pose greater challenges to business and society. These challenges will affect the US telecoms and data center sector capacity and reliability in various ways, particularly in terms of having the capacity to handle increased demand for services during extreme weather events.

## case study

During Hurricane Sandy, telecom companies on the Eastern seaboard witnessed first-hand that their infrastructure and operations were not able to cope with extreme weather. Flooding and storm surges caused power failures, and inadequate backup generators rendered many sites inoperable. The storm also caused significant physical damage, knocking out 25% of all cell towers in an area spread over the coasts of 10 states. The storm seriously impacted service provision just when customers needed it most. Now major telecoms companies like Sprint and Verizon are working to build resilience and ensure that they avoid outages, customer complaints, and financial losses next time extreme weather hits. To see what Verizon is doing to increase its resilience, visit: <http://www.verizonwireless.com/aboutus/commitment/emergency-preparedness.html>

## 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 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>Increase heat-related health and safety risks to exposed workers (e.g., maintenance engineers, drivers, staff in exchanges)</li> </ul>
Changes in precipitation	<ul style="list-style-type: none"> <li>Leads to coastal and riverine flooding of low-lying and underground infrastructure and facilities</li> <li>Decreased precipitation may increase seasonal water scarcity, reducing the amount of water available for cooling</li> </ul>
Increased frequency of extreme events	<ul style="list-style-type: none"> <li>Damages infrastructure</li> <li>Increases risk of disruption to the electricity supply on which telecoms and data centers rely</li> </ul>
Sea level rise	<ul style="list-style-type: none"> <li>Increases in storm surges increase the risk of saline corrosion of coastal telecoms 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?
- ✓ Do critical tiers of your supply chain have redundancies in place to serve as backups?
- ✓ How have past disruptions or extreme events impacted your business?
- ✓ 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.

- *Decouple communication infrastructure from the electric grid* where possible, for example, with microgrids.
- *Move equipment out of basements or ground floors in areas at risk of flooding*, or put them on rolling carts
- *Relocate or fortify* critical telecom assets such as terminals, cell towers, power facilities, or central offices out of existing and future floodplains, as well as out of coastal areas threatened by sea level rise or storm surges.
- *Ensure your supply chain tiers have redundancies in place as backups*
- *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)

### Authors

Prepared for GSA by Riverside Technology, Inc. and Acclimatise  
 Peter Adams, Acclimatise  
 Jennifer Steeves, Acclimatise  
 Brian Ashe, Riverside

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