



How will climate change impact telecommunications & data center companies?

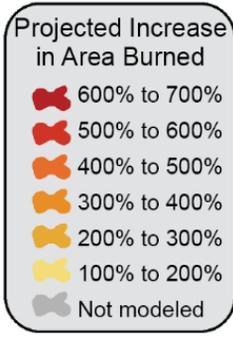
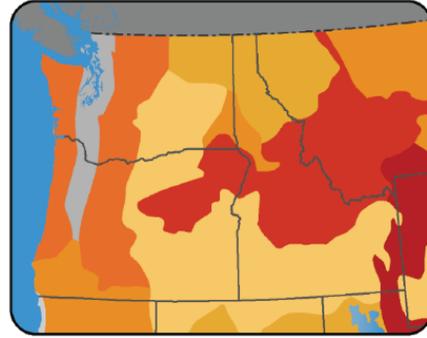
From extreme storms to incremental changes, telecommunications and data center companies are already feeling the impact of a changing climate. These impacts threaten to disrupt their supply chains and operations as well as cause costly damage to assets and infrastructure of companies in both sectors.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

Idaho, Oregon, and Washington

northwest

Climate is changing and impacts on telecoms and data centers are already being felt. Extreme rainfall in the Seattle area has, for example, already had devastating impacts on data centers in the region(see case study below).

In the Northwest, temperatures and precipitation are already increasing in most regions, altering the baseline environmental conditions that businesses and communities depend upon.



By midcentury, wildfires will increase in northwest forests. This map shows how regional temperature and precipitation changes associated with 2.2°F global warming could lead to major increases in areas burned in the northwest region of the US, putting data centers and telecoms' transmission infrastructure at risk (NCA 2014).

Changes in the seasonal timing of high and low stream flows are expected to lead to a **reduction in available water supplies** in the Northwest. As the sea level rises, erosion and flooding pose major risks to infrastructure.

case study

A severe weather event like the torrential rains that hit the Northwest in December 2007 shows how climate change can impact data centers and their customers. The Seattle area was hit by more than four inches of torrential rain and gale force winds, resulting in the flooding of a T-Mobile data center in Bothell, Washington. The flooding took down servers supporting T-Mobile's service activation portals, customer account access, and various company websites. Some major data center and companies are seeing impacts like this and beginning to work to build resilience and ensure that they avoid outages, customer complaints, and financial losses next time extreme weather hits. For an example of how one company is building 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 risks for telecommunications and data centers

northwest

| climate factors | potential impacts |
|---------------------------------------|--|
| Increases in maximum temperature | <ul style="list-style-type: none">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 |
| Decreased water availability | <ul style="list-style-type: none">Changes in timing of stream flow result in seasonal water scarcity, reducing the amount of water available for coolingDecreased precipitation, in combination with increased temperatures, may increase the incidence of fires, which poses a risk to infrastructure, especially in rural or remote locations |
| Increased frequency of extreme events | <ul style="list-style-type: none">Increases the risk of disruption to the electricity supply on which telecoms and data centers relyIncreases the risk of damage to above-ground transmission infrastructure (masts, antennae, switch boxes, aerials, overhead wires, and cables) |
| Sea level rise | <ul style="list-style-type: none">Increases in storm surges increase the risk of saline corrosion of coastal telecoms infrastructureLeads to erosion or inundation of coastal and underground infrastructure |

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.

learn more

The full report, *Climate Risks Study for Telecommunications and Data Center Services*, is available at www.sftool.gov

The National Climate Assessment has more figures and details about climate change in your region at nca2014.globalchange.gov

Questions? Please email adaptation@gsa.gov or visit www.gsa.gov/climateadaptation

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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.*
- *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.*
- *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.

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