



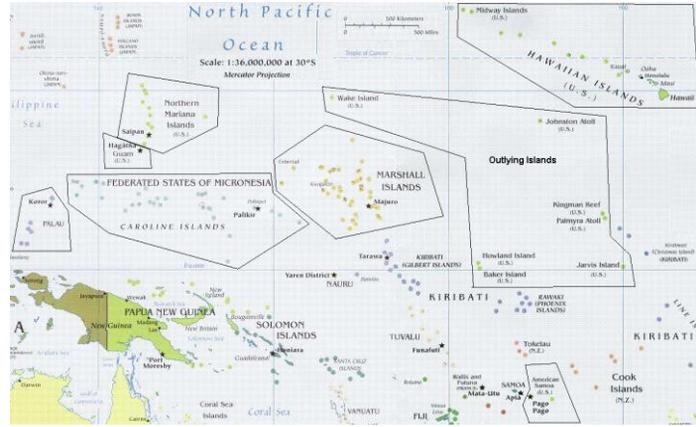
How will climate change impact telecommunications & data center companies?

From extreme storms to incremental changes, telecoms and data centers 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 Hawaii and other US Pacific Islands.

Hawaii and US Pacific Islands

Changing conditions increase operating costs and customer dissatisfaction. Rising temperatures will change how data centers are cooled and the efficiency of telecom transmission networks.

Hawaii and other Pacific islands are vulnerable because **freshwater supplies are already constrained** and will become more limited on many islands as average precipitation and stream flow continue to decrease. This could affect cooling operations at data centers.



Hawaii and the US Pacific Islands (www.nrcs.usda.gov/)

Rising air and ocean temperatures, shifting rainfall patterns, changing frequencies and intensities of storms and drought, and rising sea levels will affect local telecom companies and their customers in many parts of the Pacific. Rising sea levels, coupled with high water levels caused by tropical storms, will incrementally increase coastal flooding and erosion, damaging coastal infrastructure. Higher sea levels will also increase the impact of storms.

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 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"> 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 Increased energy demand during heat waves can result in power outages, which can affect the delivery of telecom services and increase the cost of energy supply
Reduced winter and spring precipitation	<ul style="list-style-type: none"> Causes an increase in seasonal water scarcity, reducing the amount of water available for cooling
Increased frequency of extreme events	<ul style="list-style-type: none"> Increases the risk of damage to above-ground transmission infrastructure (masts, antennae, switch boxes, aerials, overhead wires, and cables) Increases the risk of disruption to the electricity supply on which telecommunications and data centers rely
Sea level rise	<ul style="list-style-type: none"> Increases in storm surges increase the risk of saline corrosion of coastal telecommunications infrastructure Leads to erosion around 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.

assess response strategies

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

- *Explore methods to increase water efficiency or identify new water sources for cooling data centers*
- *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.

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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