Safeguarding communication infrastructure against extreme heat

COUNCIL NAME
Albury City Council

WEB ADDRESS
alburycity.nsw.gov.au

SIZE
306 square kilometres

POPULATION
50,250

Overview

In consideration of increasing regional temperature projections, Albury City Council sought to make its microwave radio network more resilient to the effects of climate change. By upgrading cabinet casings for several remote IT transmissions stations, internet and phone services across 22 critical sites, including the Emergency Management Centre, the airport and water filtration plant, essential communication, utilities and transport services are safeguarded, now and under future extreme heat conditions.

Background

Albury City Council operates four IT transmission stations that provide both internet and phone services to critical and emergency services. Equipment failure results in a loss of communications to services such as the Albury Regional Emergency Management Centre which is tasked with coordinating responses to natural disasters in the region, and also loss of communications to other key infrastructure (e.g. Albury Airport, water and wastewater reticulation network). This risk had been highlighted through Council's climate change risk assessment and was explored in the Riverina Murray Integrated Regional Vulnerability Assessment (OEH, 2012).

Albury City Council proposed a modification to the housing of essential IT infrastructure at the microwave transmitters to ensure they can withstand increases in temperature, and in doing so increase their resilience to extreme temperature events. The equipment failed when the ambient temperature exceeded 44 degrees for extended periods, which in prior years lead to an average failure rate of twice per year. By 2030, the Albury region is projected to experience 1 to 5 more days above 40 ºC per year (OEH, 2015) thereby leading to more failures if no action was taken.

Implementation

A Building Resilience to Climate Change grant of $64,000 was used to design, manufacture and install heat-resistant cabinets. Each of the new cabinets for the stations now include cooling fans, activated when the internal temperature reaches 38 degrees Celsius. The cabinets also have airflow to promote circulation and have auxiliary power generators so that if there is a network power failure, the stations can continue to operate. The cabinets have been powder-coated in a reflective colour to reduce heat retention and the need for ongoing maintenance.

Monitoring has been established for four sites that were upgraded as a result of the grant, through automated system alerting of the links and connection status, along with associated equipment temperatures. Data is recorded on an ongoing basis and any conditions outside operating parameters prompts an escalation to IT operational staff.

REFERENCES

NSW Office of Environment and Heritage (2012) *Riverina Murray Integrated Regional Vulnerability Assessment*

NSW Office of Environment and Heritage (2015) *Heatwaves: Climate Change Impact Snapshot*

Outcomes

The ongoing monitoring of the new cabinets, which were specifically designed to provide climate change resilience to increased outdoor temperatures, has shown them to be very effective. No outages were recorded over the 2015/16 summer (hottest day recorded at 43^0C), compared to an average of two failures per year in prior years.

Key Learnings

This project has reduced the vulnerability of key systems in the region; by ensure reliability and business continuity for critical services to emergency management, airport operations and water and wastewater services. It also helps demonstrate that adaptation response measures are not limited to environmental outcomes, but also provide the long-term financial sustainability outcomes, and minimise the impacts of climate change on the community.

Contact

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NSW Environmental TRUST

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