



Temporary facilities during emergencies

Summary:

- Telecommunications services may be offline during or following emergencies or natural disasters for a number of reasons. Often the primary cause is a loss of mains power and depletion of reserve power supplies.
- Telecommunications carriers have a range of temporary facilities that can be deployed to restore services after an emergency or natural disaster.
- Temporary facilities may have more limited capacity and capability than permanent facilities, but can provide a level of service to Emergency Service Organisations (ESOs) and the community when permanent telecommunications infrastructure has been impacted.
- Temporary facilities are bespoke products and deployed to suit the type of incident, the requirements at particular locations, and their availability.
- Telecommunications carriers are only able to enter affected areas when the state ESOs say it is safe to do so. Once safe to enter, restoration of permanent facilities or instalment of temporary facilities can sometimes occur quickly (for example if it is a case of refilling the diesel tank for a generator). However, restoration works on permanent facilities can sometimes take considerable time depending on the extent of the damage. Temporary facilities can also take time to connect, in some cases around a week.

Despite the best efforts of ESOs and telecommunications carriers, occasionally telecommunications facilities are taken offline because of a disaster. This can be because facilities have been damaged or even physically destroyed, or because other supporting services are unavailable—such as power or backhaul transmission (that is, services that transmit data from the edge of a network—such as a mobile base station—to the rest of the internet or voice network). In the 2019-2020 bushfire season and in subsequent natural disasters, although some telecommunications facilities were damaged or destroyed, the primary cause of telecommunications outages was a protracted loss of mains power, and depletion of the backup power supplies.

Telecommunications carriers try to get services back up and running as soon as possible, and they have a number of options to do so. For example, where safe, carriers work with energy companies to restore power and if access is available, can deploy generators to sites that have lost power. In some circumstances, carriers can also deploy temporary telecommunication infrastructure facilities. Temporary facilities may also be used to provide services to ESOs, and sometimes, to the community.

What temporary facilities can be deployed?

To a certain extent, all temporary facilities are bespoke to each carrier, and are adjusted to suit the local conditions they are deployed into. There are a variety of temporary facilities mobile carriers can deploy. For example:

- **Mobile Exchange on Wheels (MEOW):** MEOWs are used to restore communications such as voice and ADSL services. Depending on the extent of damage to the permanent network, the deployment of a MEOW requires infrastructure and customer specific configuration to be loaded. This can take approximately one week to become operational.
- **Cell on Wheels (COW):** COWs are used to restore mobile services to both the general community and ESOs and require access to exchange based facilities for transmission backhaul.
- **Satellite Cell on Wheels (SATCOW):** SATCOWs can be deployed to remote locations, and can use solar power and satellite backhaul to provide a small area of mobile coverage for ESOs and the general community.

There are also some facilities that NBN Co can deploy:

- **Network on Wheels (NOW)/Wireless Network on Wheels (WOW):** These compact trailers are easily towed and built to temporarily replace damaged equipment in a Fixed Wireless tower or telephone exchange while permanent repairs are carried out.
- **Road Muster trucks:** These vehicles are equipped with an NBN Co Sky Muster satellite dish to provide ESOs and evacuated residents with a Wi-Fi connection. These trucks also display information via external screens and play emergency radio broadcasts over their speakers. They can also serve as charging stations for communities.

What are the limitations to temporary facilities?

Temporary facilities are one way that telecommunications carriers can provide services in the aftermath of a disaster and where physical damage to infrastructure has occurred. However, they do have some limitations:

- **Availability:** There are limited numbers of temporary facilities. Telecommunications carriers determine where they are deployed based on criteria including priority and suitability of the facilities to address the specific requirements at a location. The Commonwealth Government can coordinate engagement with telecommunications carriers but cannot make any directions about the deployment of their assets. Generally, only once the type and extent of site damage is confirmed can a decision be made to deploy required temporary facilities. Technicians must first assess site damage, determine type and length of time of remediation activity to restore permanent facilities, and finally assess the priority level compared to other impacted sites across the carrier's network. Carriers also consult with ESOs in determining where facilities are deployed, both to support emergency efforts and community connectivity.
- **Site access:** Most temporary facilities need to be deployed using roadways. This can be challenging following disasters. For example, following bushfires fallen trees (or the risk of falling trees) and ongoing fire activity can limit road access. Telecommunications carriers work with ESOs, and the Australian Defence Force (ADF) if involved, to gain access to sites as soon as possible but only once ESOs say it is safe to enter.

- **Capacity:** Temporary facilities can provide services when permanent facilities are compromised. However, temporary facilities generally have less capacity than permanent facilities. Coverage is typically more limited due to technical and physical limitations (for example, obstacles blocking the line of sight to infrastructure or height limitations). Where generators have been deployed to provide backup power sources, fuel reserves may become depleted. Refuelling may not be possible if it is unsafe to re-enter the impacted area. Similarly, backup batteries have a depletion lifetime and require site access for replacement.
- **Rapid response:** Temporary facilities can be deployed much more rapidly than permanent facilities (which can take months to become operational) but they are not all instant. Some facilities can take a week or so to be deployed.
- **Deployed after a disaster, not during:** Temporary facilities are typically deployed following a disaster rather than during it. This is because technicians can only be deployed when ESO's indicate it is safe to do so—including under escort conditions where necessary. Additionally, when a disaster is ongoing there is a substantial risk that the temporary facility will be destroyed by the event that destroyed the permanent facility. Having said this, telecommunications carriers do have mechanisms available to rapidly deploy assistance to ESOs to aid in first responder efforts.
- **Interference:** It is possible for some temporary facilities to interfere with regular services. Where this is a risk, temporary facilities cannot be deployed. For example, deploying a SATCOW to areas with overlapping coverage from a COW or permanent facility will disrupt mobile communications to the area it is required to support as well as to those areas there is overlapping coverage. Environmental factors such as lingering smoke haze can also interfere with temporary satellite facilities.

Role of government

State and territory governments are responsible for emergency management within their own jurisdictions, including the resilience of power networks and provision of communications for ESOs. Telecommunications carriers are responsible for the provision of their networks, and the deployment of temporary facilities where possible and appropriate.

The Commonwealth's primary role is to develop regulations, policy and programs that can assist in improving resilience across the telecommunications sector, and improve the coordination efforts of carriers, ESOs and other industry sectors, such as electricity, to respond to service outages during a natural disaster or other emergency. The Commonwealth also attends and contributes to the Trusted Information Sharing Network and Communications Sector Group, which is a mechanism for telecommunications and other companies to share experiences and preparedness plans.

The Australian Government is making significant investment in telecommunications resilience so that communities can stay connected during emergencies.

- One component of the \$37.1 million Strengthening Telecommunications Against Natural Disasters (STAND) package was the allocation of \$10 million for portable telecommunications facilities to help communications services be restored quickly. These assets have helped communities stay connected in the aftermath of disasters.
- The Telecommunications Disaster Resilience Innovation (TDRI) program is also helping identify new and emerging technologies to improve the preparedness of Australia's telecommunications sector, and resilience of telecommunications networks against the impacts of natural hazards and power outages.