



# NATURAL DISASTER PLANNING: REFRIGERATION

**Management and Recovery of  
Refrigeration Systems in Business  
Continuity Planning**



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*Many communities have been affected by natural disasters in New Zealand. Being prepared can limit potential damage to your people and your business. This guide is designed to help support your Business Continuity and Disaster Management Planning process, by taking a look at the management and recovery of refrigeration systems.*

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This information is provided as a guide only. We hope this information is useful and provides some assistance in developing emergency response programs. It is not intended as a substitute for professional advice particular to your circumstances and we accept no liability for damages .





*Chapter One*

PREPARING FOR A  
NATURAL DISASTER



# WHAT TO DO BEFORE A NATURAL DISASTER OCCURS

*Planning requires some up front work but will protect your people and your business. If you don't have a plan there are a number of templates available on the internet including at [business.govt.nz](http://business.govt.nz).*

- 1. Build good relationships:** Build a good relationship with your service provider before you need them. You don't want to be searching directories in an emergency. Ensure they are familiar with your site and systems, as this will shorten operational down time.
- 2. LABEL your system:** Make sure systems are labelled with the type of refrigerant they contain - this can be life-saving. Ensure main switches, cutoff switches and key systems are labelled with functions, someone who does not know the system may need to shut it down.
- 3. Make sure your Asset Management System is up to date:** Not only will this help in understanding service and repair requirements, it will support damage and loss claims. Ensure records of lease agreements, warranties and other important information are protected and backup copies exist.
- 4. Maintain systems:** Have regular maintenance plans in place for both the system and the electrical services connected to them. This can identify potential sources of fire during an emergency. Regular maintenance will ensure a robust system and help with identifying issues that cause hazards under stress, such as refrigerant leakages. Regularly conduct preventative maintenance on refrigeration equipment including compressors, condensers, evaporators and related components, in accordance with the manufacturer's specifications.

# WHAT TO DO BEFORE A NATURAL DISASTER

## 5. **Understand your insurance cover.**

Work with your insurer or broker to understand if spoilage and equipment breakdown are covered in the event of an incident. Create a plan to prioritise repair and loss spend.

## 6. **Refrigerant storage.**

Any compressed gas should be contained as per New Zealand regulations – ensure cylinders are appropriately located and secured and clearly identified to aid emergency services to better understand the associated risk.

## 7. **No life is worth a cost saving.**

Building code regulations and standards cover the safe installation and build of HVAC&R systems. Using a professional is essential to make sure you're as safe as possible in every eventuality.

Systems can be strengthened against potential damage and risk - look for companies that are members of the Climate Control Companies Association as they are committed to professional excellence and understanding of the latest improvements available.

Always make sure the person who carries out the work is qualified and registered through NZQA and the EWRB, and holds a Refrigerant License. Use members of the Institute of Refrigeration, Heating, and Air Conditioning Engineers Association (IRHACE), as they are offered regular training and upskilling, in line with industry best practice.

## WHAT TO INCLUDE IN YOUR BUSINESS CONTINUITY PLAN:

*Put your business continuity plan together with your HVAC&R service partner. Don't forget, modern buildings that are hermetically sealed, or mechanically ventilated, may require evacuation if HVAC systems break down, this includes failure of fans in underground car parks.*

### Your plan should include:

- Service partner contact information; emergency call out and service numbers.
  - A copy of HVAC and Refrigeration system engineering plans and specifications – ensure a hard copy is available as IT systems may be down.
  - Details of employees with designated HVAC&R responsibilities including rosters for protecting perishables during all shifts, including afterhours, nights, weekends and public holidays.
  - Inventory management of spare parts for critical equipment and supplies for refrigeration systems including motors, valves, refrigerant and oil.
  - HVAC&R emergency operational procedures and a supporting communications plan to ensure they are well understood. Training should be provided by your service partner in all emergency procedures. In particular address:
    - Emergency stop procedures in the event help is unavailable. Ensure employees have the right tools readily available to support procedures.
    - Processes for leak detection systems and alarm response. Unfortunately in HVAC and Refrigeration systems these can be “optional”.
    - A plan to ensure systems and pipes are fully secured and remain that way. In particular, ensure a regular system for checking the safe constraint of overhead services and systems such as pipes, ducting and air handler units.
    - Fire emergency planning – for large sites sharing information with fire services can avoid response delays in an emergency.
    - For walk-in chillers or freezers protected by fire sprinkler heads, have a pre-emergency plan that identifies sprinkler heads and address issues such as what to do if there is accidental sprinkler head discharge of water from a broken head.
    - Emergency power procedures to ensure systems remain running.
- See: Loss of refrigerated system's: Plan B, C and D.

## Loss of refrigerated system's: Plan B, C and D.

Understand worst case you may have a site that cannot support refrigerated systems. This could be further complicated by limited or no access to roads, ports or rail. Plan for scenarios where outside help may not be available for 3 days or more.

- Create a plan to move product as soon as you can, if you can't refrigerate items.
- If possible, have spare in-place refrigerated capacity, or portable chillers and freezers. This also may be useful to store product that has a longer shelf life and that doesn't require immediate cooling.
- Refrigerated space in New Zealand is at a premium, don't rely on it being readily available in a disaster. Work to identify alternative storage locations –work with other locations (if you are part of a wider network) or businesses outside of your area to create agreed storage planning – they'll need to have a plan too.
- Understand if the use of refrigerated trucks or containers will work for you. Have a plan on how to contact suppliers and how they will get to you.
- Make sure to have a plan to substitute and source products if stock does spoil, so you can get back to operational as quickly as possible.

## Planning to keep refrigeration systems running: Power requirements

Having a pre-emergency plan that includes back-up power and alternative refrigeration solutions will help minimise stock loss and protect refrigerated assets:

- Understand the worst case scenario for power losses and work to support that. This includes understanding the likely sources and potential frequency and duration of power outages.
- Recognize that different types of foods and medicines have varying shelf lives. In order to properly protect stock, determine what the specific perishable hold times are for products and add in a safety margin.
- To understand load demands on a generator, determine what refrigeration, ventilation, and any other related electrical equipment must remain operable when normal power is interrupted. Your service partner will be able to help by conducting electrical load analysis of equipment to determine the power consumption.
- When purchasing or leasing a portable or permanent generator a cost-benefit analysis can help determine what type of back-up will be sufficient.



## *Chapter Two*

# WHAT TO DO DURING A NATURAL DISASTER

The most important thing is your safety.

Stay calm and follow company emergency procedures.

Evacuate refrigerated spaces and don't stop to turn off systems – emergency pressure controls, release valves, system overloads and other automatic contingencies will activate if required.







*Chapter Three*

AFTER A NATURAL  
DISASTER



# WHAT TO DO AFTER A NATURAL DISASTER

## **ALWAYS SAFETY FIRST**

*It may be some time before buildings can be safely entered. HVAC&R systems and piping are not as secure as the building envelope and may pose fall hazards, electrical hazards and potential refrigerant and other fluid leakage hazards.*

*Remember structural engineers do not assess mechanical systems and your service partner is always a first point of reference to ensure safety of HVAC&R systems. **If in doubt ring them immediately.***

### **Undertaking a visual inspection:**

- Check for obvious hazards and damage such as fires, arcing, broken pipes and gas leaks. Treat all down or exposed wires as live.
- Check leak detection systems and ensure there is no evidence of leaks or any sign of gas - immediately shut down the system and contact your service partner if you suspect anything.
- Check for movement of base units, condensers, compressors, vessels and fan coils – check bolts and lateral supports.
- Check sway restraints on suspended equipment.
- Check all roof mounted equipment. In the case of earthquakes be aware an aftershock can occur at any time and ensure the building is safe and employees protected.
- Check integrity of insulation and ensure pipes are secure and contained.
- Accidental discharge of sprinkler heads in walk-in freezers and coolers can be greatly reduced by creating employee awareness. Help them to identify sprinkler heads and alert them to the importance of avoiding contact with sprinkler heads and not breaking them.

If any issues are identified cordon off areas and immediately contact your service partner. Do not touch switches and levers unless a hazard is identified.

# WHAT TO DO AFTER A NATURAL DISASTER

**Implement emergency power back up procedures as soon as possible if required.**

**Check system diagnostics.**

Not all damage is visible. Undergo a wiring assessment and do a systems diagnostics check to ensure systems are operating within required temperatures, monitoring for alarms and faults. If you do not have an internal systems diagnostics program, ensure your service partner completes an assessment as soon as possible.

**Ensure any repairs are undertaken by a credible service provider.**

There may be delays in having systems repaired after a major event as providers are kept busy and in demand. If this is the case, ensure you and your business are protected from unlicensed operators.

Do not accept verbal contracts and ensure anyone who approaches you to do work is:

- Fully accredited under NZQA and EWRB
- Their employer company is a member of the Climate Controls Companies Association (CCCA).

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