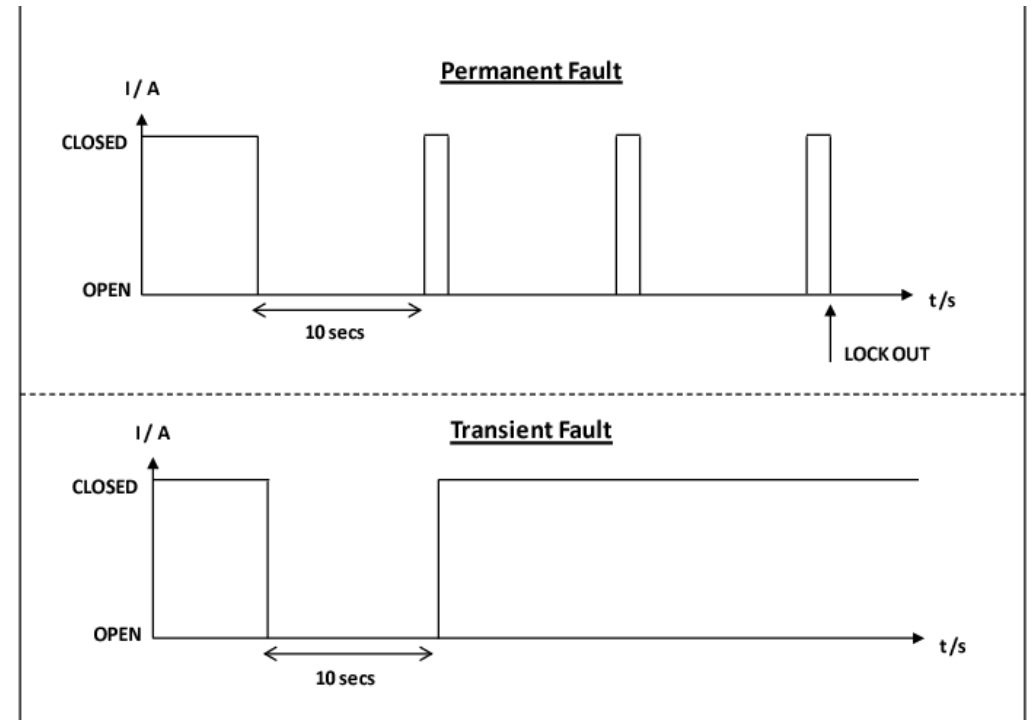
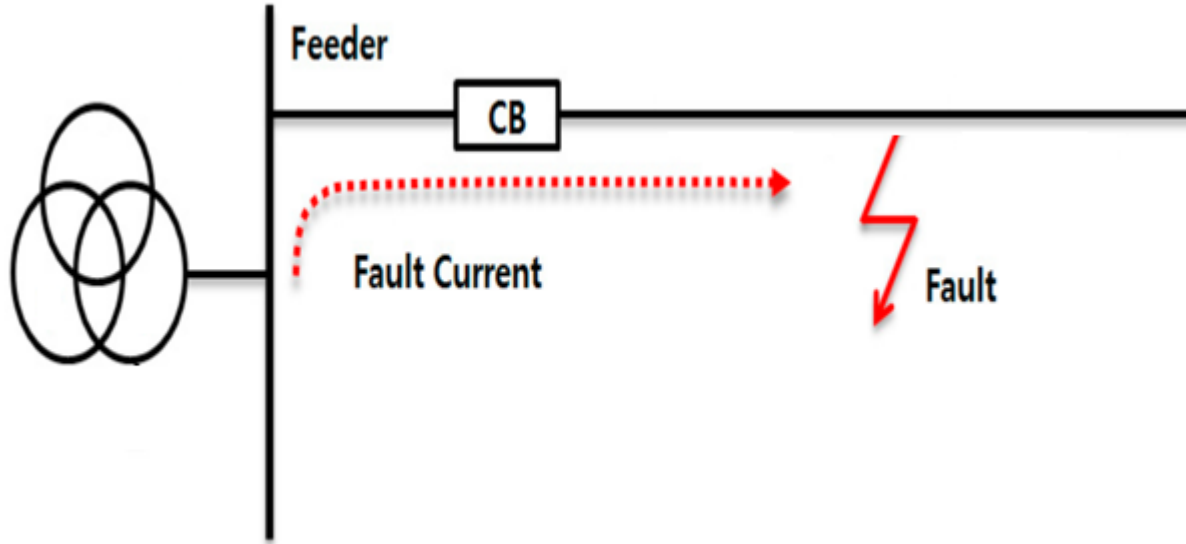


# Fire Risk and Auto Reclosers

- Why
  - To reduce risk that auto-reclosing may start a fire in extreme dry environment
  - Balance of risks
    - SAIDI – duration of faults reduced by auto-reclosers
    - Safety – risks of auto-recloser operation to those close to a fault
    - Fire risks – when very dry environment then auto-reclosers might start a fire

# Auto Reclosers



tripping sequence

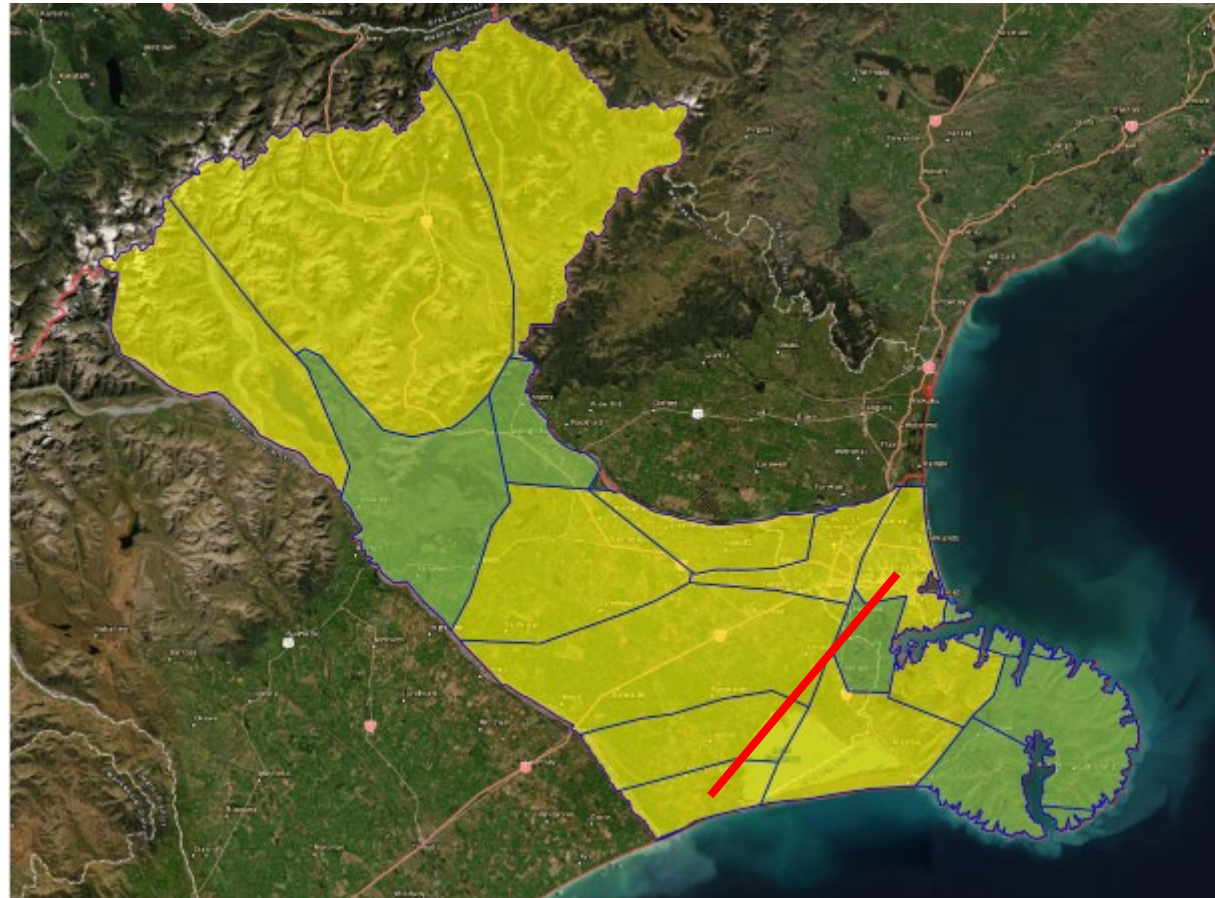
# Fire Risk and Auto Reclosers

- What
  - Measure risk and enable/disable auto-reclose on breakers
- How
  - Incremental implementation
- Assessment
  - Function, Cyber, Resilience, Operations, Strategy

# fireweather.niwa.co.nz - Wednesday



# fireweather.niwa.co.nz - Sunday



Map Key : Powerline

Extreme

High

Low

# Auto-Reclose - Control System View

Auto Recloser by Fire Zone

Overall Control Mode: Semi-Auto

**BURNHAM**

**BURNHAM (66 & 33 kV)**

**BURNHAM (11 kV)**

**McLEANS**

**BOTTLE LAKE**

**LEES VALLEY**

**FOREST PLAINS**

**OXFORD 2**

**GLEAMM STATION**

**SNOWDON**

**LEESLTON**

**WEST MELTON**

**SOUTHRIDGE**

**EARLY VALLEY**

**MOTUKARARA**

**DIAMOND HARBOUR**

**PANAMA ROAD**

**TE OKA**

**Legend:**  
 On  
 Christchurch  
 Selwyn District  
 Christchurch and Selwyn District  
 Not part of group control

## DIAMOND HARBOUR

Diamond Harbour - PB4/31  
Unit 3902 - Motukarara 3602-3612

**Auto-Reclose**

**Alias:** DHB1\_3902\_L90\_AREI

**Name:** Auto Redose

**State:** On

**District:** Christchurch

**Fire District:** fdH fMO fEV

Unit 111 - Charleis Bay

# Outcomes

- Moved over several years from “set and forget”
  - To manual seasonal and regional control settings
  - To manual daily (even hourly) settings
  - To automation of settings
- Fire Service assessment of powerline risk is queried
- Applied to each auto-recloser based on highest risk in the districts crossed by each distribution line

# What do you need ?

- Skills
  - Conversations with NIWA and fire service
  - Web site services and applications
  - Firewalls and cyber risks
  - Control systems services and applications
  - Strong IT/OT experience
  - perseverance



# Next steps

- Review operations
  - Measurement of risks (SAIDI, fire service)
  - Actual operations, any defects?
- Improve architecture
  - Cyber enhancements
  - Resilience improvements
  - True automation vs scheduled cron job

# Thank you across the Orion team

- Vision, wanted this done and automated – Asset Managers
- Design, safety and analysis – Engineering
- first manual stages – Controllers
- partial automation – Control Systems Engineer
- Statement Of Intent (automate this year) – General Manager
- data from NIWA to PowerOn – Information Services Developers
- full automation – Control Systems Engineer

# Risks

- Supply of electricity – SAIDI
- People – Safety by Design
- Environment – Fire hazards
- Implementation
  - Complexity (range of skills sets) - needs to be control system robust
  - Supply chain (internal and external), not all risk views align