



**Eastland**  
Network

**SECURITY OF SUPPLY**

**PARTICIPANT ROLLING OUTAGE PLAN**

DECEMBER 2021



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# 1 Introduction

This plan was written to comply with the System Operator’s Rolling Outage Plan (SOROP) and it will be reviewed and updated biennially.

The procedures outlined are in response to major generation shortages and/or significant transmission constraints. Typical scenarios include unusually low inflows into hydro-generation facilities, loss of multiple thermal generating stations or multiple transmission failures. How an event is declared and how the System Operator should communicate its requests are detailed.

The main energy saving measures listed is rolling outages and how these are structured and implemented is discussed.

# 2 Purpose

Under the regulations, Participant Rolling Outage Plan (PROP) is required to specify the actions that would be taken to;

- Reduce electricity consumption when requested by the System Operator in consultation with the Electricity Authority
- Comply with the requirements of the System Operator’s Rolling Outage Plan (SOROP)
- Comply with the Electricity Industry Participation Code 2010 & subsequent amendments

Reducing demand by disconnecting supply to customers would be a last resort after all other forms of savings including voluntary savings had been exhausted. Eastland Network will always endeavour to keep consumers supplied and will only disconnect consumers when directed to by the System Operator.

# 3 Definitions

|                 |   |
|-----------------|---|
| Act             | Electricity Industry Act 2010 and subsequent amendments   |
| AUFLS           | Automatic Under Frequency Load Shedding   |
| Authority       | Electricity Authority   |
| Code            | Electricity Industry Participation Code 2010 and subsequent amendments  |
| ENL             | Eastland Network Limited  |
| Feeder          | A high voltage circuit typically supplying up to 2000 customers   |
| GXP             | Transpower Grid Exit Points   |
| GEN             | Grid Emergency Notice   |
| PROP            | Participant Rolling Outage Plan (this plan)   |
| Retailers       | Electricity Retail Companies  |
| Rolling Outages | Planned electricity disconnections spread over different parts of the network at different times to avoid prolonged outages at any one location |
| SOROP           | System Operator Rolling Outage Plan   |
| Supply Shortage | Declaration made by the System Operator in consultation with the Authority under part 9.14 of the Code  |
| System Operator | Operator of the national electricity transmission grid  |



## 4 Background

### 4.1 Electricity Authority

The Electricity Authority is an independent Crown entity set up under the Electricity Industry Act 2010 to oversee New Zealand's electricity industry and markets.

In accordance with the Code, the Electricity Authority must approve the SOROP submitted by the System Operator.

### 4.2 Transpower

Transpower is a State-Owned Enterprise, which owns and operates New Zealand's National Grid - the network of high voltage transmission lines and substations that transports electricity from where it is generated to distribution line companies, such as ENL.

As System Operator, Transpower manages the real-time operation of New Zealand's electricity transmission system. It keeps the right amount of energy flowing to match generated supply with demand.

### 4.3 Eastland Network

Eastland Network is the electricity network company that owns and maintains the electricity assets (lines, cables, substations etc) that deliver power to the upper East Coast of the North Island (Gisborne and Wairoa districts).

Eastland Network is supplied from a single GXP at Tuai.

*Table 1: GXP list for rolling outage*

| GXP     | Rolling outage may occur | Reason for there being no rolling outages |
|---------|--------------------------|---|
| TUI1101 | Yes                      | N/A                                       |

## 5 Range of Events

Events that could lead the System Operator to make a supply shortage declaration can in general terms be categorized as;

**Developing Event:** Events that evolve over time, for example low hydro lake levels.

**Immediate Event:** Events that occur with little or no warning, usually as a result of a transmission line or major generation failure.

A Developing or an immediate event will be classified by ENL as a major incident and ENL's management team will activate the appropriate contingency plan and will manage the incident accordingly.

Communication with retailers, local authorities, civil defence and other stakeholders will be done by the ENL control centre by the appropriate notification procedures in place.

## 6 ENL Staff Responsibilities

*Table 2: ENL Staff roles for PROP*

| Role                                       | ENL Personnel            |
|--|--------------------------|
| Receive communication from Authority       | General Manager Networks |
| Receive Communication from System Operator | ENL Control Centre       |
| Implement this plan                        | General Manager Networks |
| Prepare load shedding schedule             | Asset and Planning Team  |



|   |                                    |
|---|------------------------------------|
| <b>Weekly savings reporting</b>               | ENL Control Centre                 |
| <b>Retailer and Consumer Notification</b>     | ENL Control Centre                 |
| <b>Revoking rolling outages</b>               | General Manager Networks           |
| <b>Reporting to System Operator</b>           | ENL Control Centre                 |
| <b>Reporting to media and public agencies</b> | Marketing & Communications Manager |
| <b>Reporting to CDEM and Lifelines</b>        | General Manager Networks           |

## 7 Communication with System Operator

The System Operator can contact Eastland Network using the following details:

- For managerial matters:
 

Jarred Moroney  
 General Manager Networks  
 Ph: 06 869 0701 | 021 860 408  
 Email: [Jarred.Moroney@eastland.nz](mailto:Jarred.Moroney@eastland.nz)
- For operational matters:
 

Duty Controller (weekdays 6am-6pm)  
 Ph: 06 869 0720  
 Email: [control@eastland.nz](mailto:control@eastland.nz)

Afterhours Duty Controller  
 Ph: 0800 237 900

Eastland Network will contact the System Operator using the following details:

- For administrative matters (relating to supply shortages, directions, rolling outages, media/public communications):
 

Ph: 04 590 7000  
 Email: [system.operator@transpower.co.nz](mailto:system.operator@transpower.co.nz)
- For operational matters:
 

Ph: 04 563 5087  
 Email: [rcc.operations@transpower.co.nz](mailto:rcc.operations@transpower.co.nz)

## 8 Actions for Immediate Events

### 8.1 System Stability

Transpower, as the system operator, is required to keep enough reserve generation to cover the risk of the largest connected generator tripping. They are also required to keep the system frequency at 50 Hz. If a large generator trips or a transmission line failure, it may cause a reduction in frequency which if not rectified can result in other generators tripping and could lead to cascade failure of the transmission system.



As reserve generation cannot immediately pick up the load of a disconnected generator, an immediate load reduction is required until additional generators can pick up load. Automatic load shedding groups reduce load in stages until the frequency stabilises.

To recover from immediate events electricity demand can be reduced by;

## 8.2 Reserve Market

Generators and load users with interruptible load such as heating/cooling and pumping process may offer in reserve capacity to cover the risk of the generation unit failure or a critical transmission line tripping. In order for this to be achieved investment in control and monitoring equipment’s must occur. In addition, the likely revenue stream from the market less the compliance costs of participating in the market must make the investment viable.

ENL does not presently participate in this market.

*Table 3: Interruptible load on ENL network*

| GXP     | Percentage of average annual demand available for interruptible load (MW) |
|---------|---|
| TUI1101 | 0%  |

## 8.3 Automatic Under Frequency Load Shedding (AUFLS)

If the actions by the Reserve Market are insufficient to stabilize the network, further automatic load reduction is required.

Each distribution network company must always unless exempted have available two blocks of load. Each block must be at least 16% of its total load to be shed by automatic under frequency relays.

### 8.3.1 AUFLS Zone 1

If system frequency fails to recover after Reserve Market load shed, AUFLS Zone 1 load shedding will occur by disconnecting customer supply. At Eastland Network this is done by the feeder protection relays at zone substations owned by ENL, which will disconnect specific feeders when the system frequency drops below 47.8 Hz for 0.4 seconds and will shed at least 16% of the network load.

### 8.3.2 AUFLS Zone 2

If Zone 1 tripping fails to restore frequency, the next stage, Zone 2 activates, if the system frequency is still below 47.8 Hz for 15 seconds or if the system frequency drops to 47.5 Hz for 0.4 seconds. This will disconnect a further 16% of ENL’s load by disconnecting more feeders.

If further Load shedding is required to stabilize the network, the System Operator will request ENL to shed more loads manually. ENL will reduce load demand at the GXP by: Running generators, turning off water heating loads, disconnecting large industrial loads and then general load shedding by disconnecting feeders.

## 8.4 Generators

ENL owns six 1 MW portable diesel generators that can be run to reduce ENL’s maximum demand at the GXP by anything up to 5 MW. Typically, these generators are in standby mode and can be quickly brought to operational state and be online within ten minutes.

There are also two embedded hydro generators connected to ENL’s network. If required ENL will request the generator owners to run at maximum possible capacity and this could reduce ENL’s load at the GXP by up to 6.5MW.



## 8.5 Water Heating Load

ENL has manual control to turn off water heating loads quickly if required. This load is varying in nature and will depend on the time of the day.

## 8.6 Disconnection of Loads

### 8.6.1 Large Industrial Loads

If more load shedding is required ENL will liaise with large industrial customers such as Affco, JNL, Cedenco and switch off their supply.

### 8.6.2 General Load Shedding

If ENL is required to reduce its demand even further ENL will shed more loads by disconnecting more feeders as per feeder disconnection list in Appendix 1.

The feeder disconnection list is in general order of low to high priority. The basis of priority depends on the region and considers impact on the community. For instance, in the rural townships the substation feeders that supply to the town centres will be disconnected last after all the other feeders in that region have been disconnected. Also, consideration will be taken not to disconnect town centres of two adjacent rural townships so that the affected people have the option to procure supply and amenities from the town closest to them if needed. In the urban regions the industrial loads will be disconnected before the residential loads as the residential feeders also have school, dairies and street lightings connected to them, so they are given a higher priority. And as a last resort after all the rural, semi-rural, industrial and residential feeders have been disconnected; the feeders that supply predominantly to the CBD area will be disconnected.

Once the frequency has stabilized the System Operator will advise the ENL control centre when load can be restored.

## 8.7 Supply Restoration

Restoration of disconnected loads must be restored in conjunction with the System Operator to prevent overloading the transmission grid and/or creating further instability.

## 8.8 Transmission Grid Emergency

When an Immediate event occur, it is likely that the System Operator will activate the Grid Emergency provisions since the nature of a grid emergency is similar in nature to an immediate event. If the System Operator request ENL to reduce load under a Grid Emergency Notice (GEN), the steps taken to reduce demand will be same as the steps described in the above section for an Immediate event, depending on which stage ENL has undertaken already as a result of an immediate event in place, before the declaration of the grid emergency and will proceed further if required with the plan once grid emergency is declared. If the System Operator declares a supply shortage following a grid emergency, then ENL will respond by implementing rolling outages in accordance with the following "Developing Events" section.

# 9 Actions for Developing Events

If the System Operator requests load reduction for a planned developing event, ENL must reduce demand to meet the System Operator's weekly energy savings target that will be reviewed weekly. There may be financial penalties for not meeting the targets specified by the System Operator.

To reduce energy usage at the TUI1101 GXP, ENL may at first use its diesel generators and then disconnect feeders in a controlled manner (rolling outages) to enable targets to be reached.

The shedding of water heating load is generally not a viable option for energy saving.



## 9.1 Declaration of Developing Events

The System Operator will endeavour to provide at least 14 days' notice of a supply shortage declaration and at least 9 days' notice of a direction containing a savings target, including the times and dates the savings target will likely apply.

The System Operator would need to request the specific energy savings target to be enforced for a specific region for a specific timeframe.

The System Operator is responsible for general media advertising of the need to conserve electricity and the impending rolling outages when they are requested.

If ENL plans to issue a public message related to rolling outages, then this will be sent to the System Operator for review before being released. Any such communication will give time for response from the System Operator, so as their feedback can be included before ENL issue the message to the general public.

## 9.2 Coordination with System Operator

All operational communication with the System Operator will be between the ENL Control Centre and Transpower's Regional Operating Centre (North) using normal communication systems in place.

On receipt of a direction to save energy from the System Operator ENL will acknowledge this by email.

Prior to notifying and implementing rolling outages, ENL will consult with the System Operator to establish a process for load shedding and restoration, which may include a MW load cap to operate under during restoration phases.

## 9.3 Load Disconnection & Reconnection Process

When load shedding and restoring ENL will best endeavour to:

- Not increase or decrease its load by more than 25MW in any five minutes period without the system operator's prior approval.
- Minimise the impact on frequency and voltage stability.
- Minimise the disconnection and restoration of its load during times when demand is typically ramping up or down in the region affected by the supply shortage (for example, either side of morning and evening peaks).

## 9.4 Shutdown Notification

When implementing rolling outage plan, ENL will notify the customers and the retailers, where possible at least 7 days in advance, of the pending outages. Notification will be done in a number of ways:

- Public Notices: ENL will place public notice advertisements (see draft in Appendix 2) providing a rolling outage timetable showing the times and areas affected by rolling outages. ENL will also use local radio stations to broadcast in advance on the rolling outage timetable.
- ENL Website: the rolling outage timetable will be displayed on the ENL website under 'outages' section [www.eastland.nz/eastland-network/outages](http://www.eastland.nz/eastland-network/outages)
- Social Media: rolling outage notification will be posted on the ENL Facebook page.
- Retailer Notification: ENL will provide the timetable of the rolling outages to all electricity retailers together with a schedule showing which rolling outage feeder each affected ICP is connected to.





## 9.5 Vulnerable Customers and Priority Sites

It is not possible for ENL to prevent rolling outages affecting individual vulnerable customers and priority sites. ENL will endeavour to provide the retailers as much advance notice as possible of the pending rolling outages to enable them to individually notify their vulnerable customers.

## 9.6 Retailer Agreements

ENL does not currently have any contractual agreements with retailers or consumers on its network that may adversely affect ENL's ability to comply with System Operator directions.

## 9.7 Rolling Outages

### 9.7.1 Generators

In order to reduce energy usage at the GXP, as a first measure ENL may run its diesel generators. By running the generators up to 12 hours a day for seven days ENL can accommodate up to 6% of energy savings based on the average weekly energy usage during the winter period of 2020. For greater energy savings ENL will proceed with the rolling outages by planning shutdowns on the rolling outage feeders. If any of the generators are unable to start and operate during the rolling outage period, ENL will include more feeders into the rolling outages to increase savings so that the weekly energy savings target will be met.

### 9.7.2 Criteria for Rolling Outages

To ensure public health and safety is preserved and costs to economy are minimized the following table shows desired criteria for selecting feeders to be included in rolling outages.

*Table 4: Priority Loads*

| Priority | Priority Concern          | Maintain Supply to:  |
|----------|---------------------------|--|
| 1        | Public health & Safety    | Major hospitals, air traffic control centres, and emergency    |
| 2        | Important public services | Energy control centres, communication networks, water & sewage |
| 3        | Public Health & Safety    | Minor hospitals, medical centres, schools, and street lighting |
| 4        | Food Production           | Dairy farms and milk producing facilities                      |
| 5        | Domestic production       | Commercial & industrial premises                               |
| 6        | Disruption to consumers   | Residential premises   |

Feeders generally have a variety of loads, so it's not possible to assign a single feeder to a single priority group as shown in Table 1. ENL has classified its substations and feeders that are to be included in the rolling outages, accordingly to their location and the type of loads predominantly connected to them. With this classification of the feeders, ENL will best endeavour to meet the criteria for the Table 1 priority loads, during rolling outage planning. The following points have also been noted during the selection of the rolling outage feeders:

- The Gisborne, Wairoa and Te Puia Hospitals have their own standby diesel generators to be used during power outages.
- The Gisborne Airport has standby generator.
- The ENL main office building has a standby diesel generator.
- The Gisborne and Wairoa District Councils have generators to run their office and the utility plant sites.
- The Gisborne and Wairoa Police stations have generators to keep their communication and building functional during power outages.
- All telecommunication major connections in the Gisborne and Wairoa regions have their own backup emergency generation.



- All the ENL owned Radio repeater sites have standby generators.

### 9.7.3 Rolling Outages Strategy and Methodology

The General Manager Networks, Asset and Planning Team and the ENL Control Centre will be responsible for implementing the rolling outage plan, including reviewing the weekly targets and preparing plans for weekly rolling outages based on the savings requested by the System Operator. These plans will include the schedules of estimated load shedding, amount of load shed and restoration times. These plans will be forwarded to the System Operator seven days before the planned outage, and if any significant variation is noticed or expected to these plans the System Operator will be informed of these changes.

ENL has classified its rolling outage feeders into rural, semi-rural, residential and industrial category. The rural & semi-rural feeders predominantly supply to small rural townships and comprise of mostly residential loads with few higher priority loads mentioned in table 1. These feeders are given the lowest priority and will be disconnected first during rolling outages in a controlled manner so that the rural regions in proximity are not affected at the same time. The feeders that supply predominantly to residential loads in the urban regions will be disconnected following the rural & semi-rural feeders. And then the feeders supplying to the industrialized areas will be disconnected if required, to achieve higher energy savings during the rolling outages.

In general, rolling outage times will be as follows:

- Rural Feeders: between 6am–12pm or between 12pm-6pm and these times may be alternated each day of the week.
- Semi-rural & Residential Feeders: between 6am–12pm or between 12pm-6pm and these times may be alternated each day of the week.
- Industrial Feeders: Between 6pm-12am
- These times are indicative only and will vary to accommodate for more savings when required. For Instance, the Residential feeders' outage time may be shifted from the morning or afternoon to the evening when energy consumption is higher and the Industrial feeders' outage time may be shifted from the evening into daytime when energy usage is higher.

Many of ENL's Rural Feeders are part of the AUFLS group. For them to be included in the rolling outages ENL has grouped these feeders into two different groups. When group 1 of the AUFLS rural feeders is included in the rolling outages, group 2 will not be included and vice versa. This is done to maintain the AUFLS obligations for the remaining system load while including these AUFLS feeders in the rolling outages. Also these rural feeders are grouped in a way so that when outages are taking place in a particular rural area, supply will be maintained to the closest township so that the people in the affected areas still have the means to procure supplies if they need to.

The feeders that supply to the Gisborne CBD and the Wairoa town centre have not been included in these rolling outages. As the Gisborne and Wairoa CBDs predominantly comprise of higher priority loads mentioned in Table 1, such as healthcare centres, supermarkets, petrol stations, commercial businesses, food and retail outlets, these important public services will be unaffected during rolling outages, thus preserving public health and safety as well as minimizing costs to the economy.

Having established the week ahead rolling outage plan, ENL will use best endeavours to provide the System Operator with daily week-ahead forecast of half hourly loads. If any unexpected changes occur to the forecast for a GXP of more than 20% for any trading period, ENL will notify the System Operator directly to ensure the real time security issue can be managed.

The indicative energy savings plans shown below are based on the data from ENL's energy usage during the winter period of 2020. The actual savings plan will be based upon the network energy usage for the same period previous year.



Table 5: 5% Energy Savings Plan

| 5% Savings Plan                     |               |                       |                      |
|-------------------------------------|---------------|-----------------------|----------------------|
| Groups                              | Days per week | Maximum Duration (hr) | Weekly Savings (MWh) |
| Generators                          | 7             | 10.5                  | 330.75               |
| Rural                               | 0             | 0                     | 0                    |
| Semi-rural                          | 0             | 0                     | 0                    |
| Residential                         | 0             | 0                     | 0                    |
| Industrial                          | 0             | 0                     | 0                    |
| <b>Total</b>                        |               |                       | 330.75               |
| Average weekly winter volume (2020) |               |                       | 6,508                |
| Estimated Percentage Saving         |               |                       | <b>5.08%</b>         |

Table 6: 10% Energy Savings Plan

| 10% Savings Plan                    |               |                       |                      |
|-------------------------------------|---------------|-----------------------|----------------------|
| Groups                              | Days per week | Maximum Duration (hr) | Weekly Savings (MWh) |
| Generators                          | 7             | 11.5                  | 362.25               |
| Rural                               | 7             | 6                     | 300.04               |
| Semi-rural                          | 0             | 0                     | 0                    |
| Residential                         | 0             | 0                     | 0                    |
| Industrial                          | 0             | 0                     | 0                    |
| <b>Total</b>                        |               |                       | 662.3                |
| Average weekly winter volume (2020) |               |                       | 6,508                |
| Estimated Percentage Saving         |               |                       | <b>10.18%</b>        |

Table 7: 15% Energy Savings Plan

| 15% Savings Plan                    |               |                       |                      |
|-------------------------------------|---------------|-----------------------|----------------------|
| Groups                              | Days per week | Maximum Duration (hr) | Weekly Savings (MWh) |
| Generators                          | 7             | 11                    | 346.5                |
| Rural                               | 7             | 6                     | 300.04               |
| Semi-rural                          | 7             | 6                     | 180.44               |
| Residential                         | 7             | 6                     | 155.85               |
| Industrial                          | 0             | 0                     | 0                    |
| <b>Total</b>                        |               |                       | 982.8                |
| Average weekly winter volume (2020) |               |                       | 6,508                |
| Estimated Percentage Saving         |               |                       | <b>15.10%</b>        |

Table 8: 20% Energy Savings Plan

| 20% Savings Plan                    |               |                       |                      |
|-------------------------------------|---------------|-----------------------|----------------------|
| Groups                              | Days per week | Maximum Duration (hr) | Weekly Savings (MWh) |
| Generators                          | 7             | 10                    | 315                  |
| Rural                               | 7             | 6                     | 429.14               |
| Semi-rural                          | 7             | 6                     | 180.44               |
| Residential                         | 7             | 6                     | 155.85               |
| Industrial                          | 7             | 6                     | 247.72               |
| <b>Total</b>                        |               |                       | 1328.1               |
| Average weekly winter volume (2020) |               |                       | 6,508                |
| Estimated Percentage Saving         |               |                       | <b>20.41%</b>        |



Table 9: 25% Energy Savings Plan

| 25% Savings Plan                           |               |                       |                      |
|--|---------------|-----------------------|----------------------|
| Groups                                     | Days per week | Maximum Duration (hr) | Weekly Savings (MWh) |
| Generators                                 | 7             | 10.5                  | 330.75               |
| Rural                                      | 7             | 12                    | 556.86               |
| Semi-rural                                 | 7             | 12                    | 351.12               |
| Residential                                | 7             | 6                     | 155.85               |
| Industrial                                 | 7             | 6                     | 247.72               |
| <b>Total</b>                               |               |                       | <b>1642.3</b>        |
| <b>Average weekly winter volume (2020)</b> |               |                       | <b>6,508</b>         |
| <b>Estimated Percentage Saving</b>         |               |                       | <b>25.24%</b>        |

## 9.8 Target Monitoring

To avoid discrepancy over the accuracy of different data sources, the System Operator will report on actual demand versus the target.

For load shedding to a weekly target, the ENL Control Room Operators will review System Operator's report of energy savings against the target and together with the Asset & Planning team, review future load shedding to increase or decrease the amount of rolling outages to enable the weekly target to be met.

The Asset & Planning team will be responsible for daily and weekly reporting of consumption relative to the target levels (using ENL's data source) and it will be made available to the System Operator.

In the case of daily or real time limits where the System Operator's reporting will be too slow for real time action to be taken, the ENL Control Room Operators along with the Asset & Planning team will monitor ENL's savings and adjust accordingly in the timeframe required. These savings will be calculated using GXP loads measured by ENL's SCADA system and compared with the targets supplied by the System Operator.

## 9.9 Log of Rolling Outages

The ENL Control Room Operators will log times of disconnections and reconnections of all the feeder interruptions and enter into the rolling outage log. The log sheet to be used is shown in Appendix 3.

## 9.10 Grid Emergency during Developing Event

If the System Operator declares a grid emergency during a Developing event, the grid emergency will take priority. As water heating loads are generally not used as a measure to save energy in a developing event, ENL will have water heating load as a first measure to reduce load when required for the grid emergency. Then ENL will run all its remaining diesel generators to maximum capacity if they are not already operating as part of the rolling outage. If more load shedding is required, then ENL will shed more loads by disconnecting feeders as per feeder disconnection list in Appendix 1.

## 9.11 AUFLS under Rolling Outages

The System Operator requires that the level of AUFLS during rolling outages needs to be maintained during a Developing event. ENL will include the AUFLS feeders into rolling outages but will limit the load shedding of these feeders to ensure the two AUFLS blocks are still maintained. For instance, if 10% of ENL's load have been shed, 10% of AUFLS load will also be shed, so that the AUFLS obligation will still be maintained for the remaining system load.



## 10 Contingent Events

If any unplanned event occurs, such as a Civil Defence Emergency that could alter the planned rolling outages, the ENL Control Centre will be responsible for all the decisions, and where possible will inform the Retailers and the System Operator about the changes.



## Appendix 1: Feeder Disconnection List

The Table below shows a list of the feeders in ENL's network. The feeder at the top of the list will be disconnected first and will follow down the list as required. It also shows estimated percentage of load shed expected by disconnecting feeders.

| Substations  | Feeders       | AUFLS Group | Avg kW | Est. % of Total Load |
|--------------|---------------|-------------|--------|----------------------|
| Te Araroa    | Awatere       | AUFLS 1     | 65.1   | 0.2%                 |
|              | Hick's Bay    | AUFLS 1     | 245.0  | 0.6%                 |
| Ruatoria     | Makarika      | AUFLS 1     | 122.7  | 0.3%                 |
|              | Tikitiki      | AUFLS 1     | 258.2  | 0.7%                 |
| Tokomaru Bay | Seaside       | AUFLS 1     | 101.3  | 0.3%                 |
|              | Mata          | AUFLS 1     | 220.3  | 0.6%                 |
| Tolaga Bay   | Tauwhareparae | AUFLS 1     | 118.7  | 0.3%                 |
|              | Toko-Tie      | AUFLS 1     | 71.8   | 0.2%                 |
| Ngatapa      | Ngatapa       | AUFLS 1     | 50.0   | 0.1%                 |
|              | Tahora        | AUFLS 1     | 132.4  | 0.3%                 |
|              | Totangi       | AUFLS 1     | 1.5    | 0.0%                 |
| Puha         | Whatatutu     | AUFLS 1     | 236.2  | 0.6%                 |
|              | Te Karaka     | AUFLS 1     | 205.6  | 0.5%                 |
| Patutahi     | Muriwai       | AUFLS 1     | 418.2  | 1.1%                 |
|              | Te Arai       | AUFLS 1     | 256.5  | 0.7%                 |
|              | Waimata       | AUFLS 1     | 664.6  | 1.7%                 |
| Pehiri       | W-O-Kuri      | N/A         | 88.9   | 0.2%                 |
|              | Parikanapa    | N/A         | 1.5    | 0.0%                 |
|              | Tiniroto      | N/A         | 85.9   | 0.2%                 |
|              | Tahunga       | N/A         | 21.5   | 0.1%                 |
| Kiwi         | Brickworks    | OFF         | 281.1  | 0.7%                 |
|              | Nuhaka        | AUFLS 2     | 152.4  | 0.4%                 |
| Tahaenui     | Morere        | OFF         | 226.8  | 0.6%                 |
| Matawhero    | Dunstan       | OFF         | 351.5  | 0.9%                 |
|              | JNL_A         | OFF         | 278.6  | 0.7%                 |
|              | Waipoa        | OFF         | 748.8  | 2.0%                 |
|              | Bell          | OFF         | 307.9  | 0.8%                 |
| JNL          | JNL           | OFF         | 823.6  | 2.1%                 |
| Kiwi         | Affco         | AUFLS 1     | 1049.5 | 2.7%                 |
| Wairoa       | Frasertown    | AUFLS 1     | 440.1  | 1.1%                 |
| Tuai         | Lake          | AUFLS 1     | 146.7  | 0.4%                 |
|              | Ruakituri     | AUFLS 1     | 173.6  | 0.5%                 |
| Kaiti        | Herschell     | OFF         | 171.7  | 0.4%                 |
|              | Dalton        | OFF         | 826.0  | 2.2%                 |



|             |             |         |        |      |
|-------------|-------------|---------|--------|------|
|             | Tamarau     | OFF     | 1128.7 | 2.9% |
|             | Wainui      | OFF     | 756.1  | 2.0% |
|             | Whangara    | OFF     | 670.4  | 1.7% |
| Makaraka    | Campion     | AUFLS 1 | 922.3  | 2.4% |
|             | Haisman     | AUFLS 2 | 1113.5 | 2.9% |
|             | Bushmere    | AUFLS 1 | 523.1  | 1.4% |
| Carnarvon   | Anzac       | OFF     | 293.3  | 0.8% |
|             | Kahutia     | OFF     | 399.4  | 1.0% |
|             | Awapuni     | OFF     | 721.7  | 1.9% |
|             | Aberdeen    | OFF     | 1407.2 | 3.7% |
|             | Childers    | OFF     | 1034.0 | 2.7% |
| Port        | Harris      | AUFLS 2 | 1435.4 | 3.7% |
|             | Crawford    | AUFLS 2 | 883.7  | 2.3% |
|             | Esplanade   | AUFLS 2 | 1388.4 | 3.6% |
| Parkinson   | Chalmers    | OFF     | 933.0  | 2.4% |
|             | Willows     | OFF     | 533.1  | 1.4% |
|             | Elgin       | OFF     | 893.3  | 2.3% |
|             | Cedenco     | OFF     | 742.0  | 1.9% |
|             | Solander    | OFF     | 402.9  | 1.1% |
|             | Innes       | OFF     | 149.7  | 0.4% |
|             | Lytton      | OFF     | 673.6  | 1.8% |
| Patutahi    | Lavenham    | AUFLS 1 | 497.2  | 1.3% |
| Makaraka    | Nelson      | AUFLS 2 | 1261.9 | 3.3% |
| Tuai        | Village     | AUFLS 1 | 0.0    | 0.0% |
| Tolaga Bay  | Town        | AUFLS 1 | 216.5  | 0.6% |
| Tokomaru    | Inland      | AUFLS 1 | 180.2  | 0.5% |
| Ruatoria    | Ruatoria    | AUFLS 1 | 379.0  | 1.0% |
| Te Araroa   | Te Araroa   | AUFLS 1 | 106.9  | 0.3% |
| Port        | Port        | AUFLS 2 | 115.8  | 0.3% |
| Kiwi        | Borough One | AUFLS 1 | 1545.2 | 4.0% |
|             | Borough Two | OFF     | 1197.1 | 3.1% |
| Carnarvon   | Gladstone   | OFF     | 1641.8 | 4.3% |
|             | Reads Quay  | OFF     | 907.2  | 2.4% |
|             | Palmerston  | OFF     | 927.1  | 2.4% |
|             | City        | OFF     | 653.8  | 1.7% |
| Wairoa      | Raupunga    | OFF     | 370.8  | 1.0% |
| Tolaga Bay  | Rototahi    | AUFLS 1 | 225.1  | 0.6% |
| Puha        | Kanakanaia  | AUFLS 1 | 178.0  | 0.5% |
| Black's Pad | Mahia       | OFF     | 503.4  | 1.3% |
| Puha        | Matawai     | AUFLS 1 | 1077.4 | 2.8% |



## Appendix 2: Draft Rolling Outage Public Notice

### ELECTRICITY SUPPLY INTERRUPTIONS

Please Read – Your Supply may be affected

Eastland Network Limited is required to reduce electricity consumption with rolling power outages across the Upper East Coast region, Ngatapa, Patutahi, Puha & surrounding rural areas, to meet a 10% energy savings target set by Transpower System Operator in response to the current energy crisis.

Voluntary savings have already helped reduce the impact of rolling outages, and further savings may allow us to reduce these planned cuts further.

Outages will occur within the time period shown below. Wherever possible, Eastland Networks will delay cuts and restore power early, **so please treat all lines as live.**

Eastland Networks has prioritised the feeders that will be turned off to minimise the cost of disruption to the community, and timed outages accordingly.

Further details can be found on Eastland Network's website [www.eastland.nz/eastland-network/outages](http://www.eastland.nz/eastland-network/outages) or you can call your electricity retailer.

### YOUR SAFETY AND PROTECTION

It is important to ensure you keep safe around electricity, even when it is turned off.

- Power may be restored at any time.
- Please ensure all appliances are turned off during power cuts, particularly ovens and cook tops.
- To prevent damage to computers and other electrical equipment please ensure that you turn the switch off at the wall prior to outages.

**Are you reliant on power?** If your health may be affected by these outages you need to make alternative arrangements or contact your health care provider for assistance. Please note that telephones that rely on a mains supply may not operate during outages, so plan in advance.

All other electricity distribution networks are likely to have similar outages. If you are travelling, some traffic lights may not be working. Avoid using lifts during these power restrictions.

| Areas Affected                            | Monday<br>4 July 20XX | Tuesday<br>5 July 20XX | Wednesday<br>6 July 20XX | Thursday<br>7 July 20XX | Friday<br>8 July 20XX | Saturday<br>9 July 20XX | Sunday<br>10 July 20XX |
|---|-----------------------|------------------------|--------------------------|-------------------------|-----------------------|-------------------------|------------------------|
| Te Araroa,<br>Toko Bay,<br>Patutahi, Puha | 6am-12pm              |                        | 12pm-6pm                 |                         | 6am-12pm              |                         | 12pm-6pm               |
| Ngatapa,<br>Ruatoria,<br>Tolaga Bay       |                       | 12pm-6pm               |                          | 6am-12pm                |                       | 12pm-6pm                |                        |

Note: only general areas are listed, some nearby areas will be affected

Consumers on feeders other than those listed are not scheduled for rolling outages in this period.





### Appendix 3: Rolling Outage Log

GXP: TUI1101

Date: \_\_\_\_\_

Controller: \_\_\_\_\_

| Substation | Feeder Name | Circuit Breaker | Load (Amps) | No. of Customers | Time OFF | Time ON | Duration | Notes |
|------------|-------------|-----------------|-------------|------------------|----------|---------|----------|-------|
|            |             |                 |             |                  |          |         |          |       |
|            |             |                 |             |                  |          |         |          |       |
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