



Taranaki Network

Supplementary Information – Substation Load Characteristics

EECA

23163 | 23163-RPT-002

Rev A | 9 OCT 24

Document History & Status

Revision	Date	Author	Reviewed by	Approved by	Status
A	09/10/2024	C Bergervoet	K Morison	K Morison	Final

Revision	Details

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1. Executive Summary

The following figures illustrate the characteristics of the major electrical substations (both GXP and Zone Substations) in the Taranaki region. This document supplements the main report titled "*Taranaki – Spare Capacity and Load Characteristics*".

For each GXP, the January 2023 through December 2023 apparent (MVA) and reactive loadings (MVar) are presented. For each Zone Substation, the apparent power (MVA) or real power (MW) loadings only are presented. The data is presented in graphs of:

- The load profile for the entire year.
- The maximum and minimum loads for each of the 365 days.
- Load profiles for two weeks in summer and two weeks in winter.
- Typical daily summer and winter load profiles.
- A load duration curve for the entire year.

2. Transmission/GXP Substations

The characteristics of the transmission substation **apparent and reactive power loadings** are shown in the following:

- **Carrington St GXP**
 - Figure 1. Carrington St: Apparent power (MVA) load characteristics.
 - Figure 2. Carrington St: Reactive power (MVA_r) load characteristics.
- **Hāwera GXP (Powerco Supply)**
 - Figure 3. Hāwera: Apparent power (MVA) load characteristics.
 - Figure 4. Hāwera: Reactive power (MVA_r) load characteristics.
- **Huirangi GXP**
 - Figure 5. Huirangi: Apparent power (MVA) load characteristics.
 - Figure 6. Huirangi: Reactive power (MVA_r) load characteristics.
- **Ōpunake GXP**
 - Figure 7. Ōpunake: Apparent power (MVA) load characteristics.
 - Figure 8. Ōpunake: Reactive power (MVA_r) load characteristics.
- **Stratford GXP**
 - Figure 9. Stratford: Apparent power (MVA) load characteristics.
 - Figure 10. Stratford: Reactive power (MVA_r) load characteristics.
- **Waverley GXP**
 - Figure 11. Waverley: Apparent power (MVA) load characteristics.
 - Figure 12. Waverley: Reactive power (MVA_r) load characteristics.
- **Motunui GXP**
 - Figure 13. Motunui: Apparent power (MVA) load characteristics.
 - Figure 14. Motunui: Reactive power (MVA_r) load characteristics.

Carrington St MVA

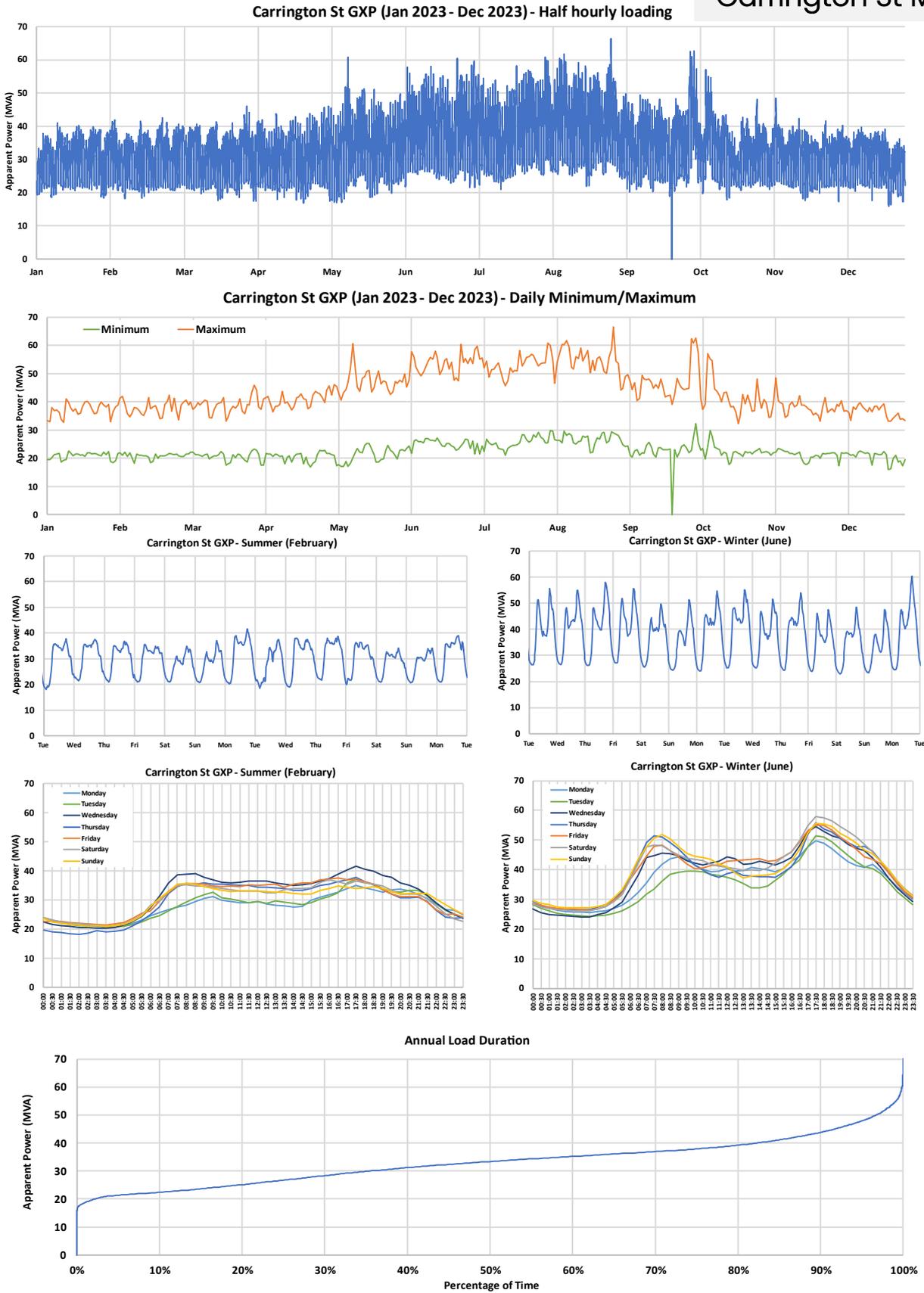


Figure 1. Carrington St: Apparent power (MVA) load characteristics.

Carrington St MVar

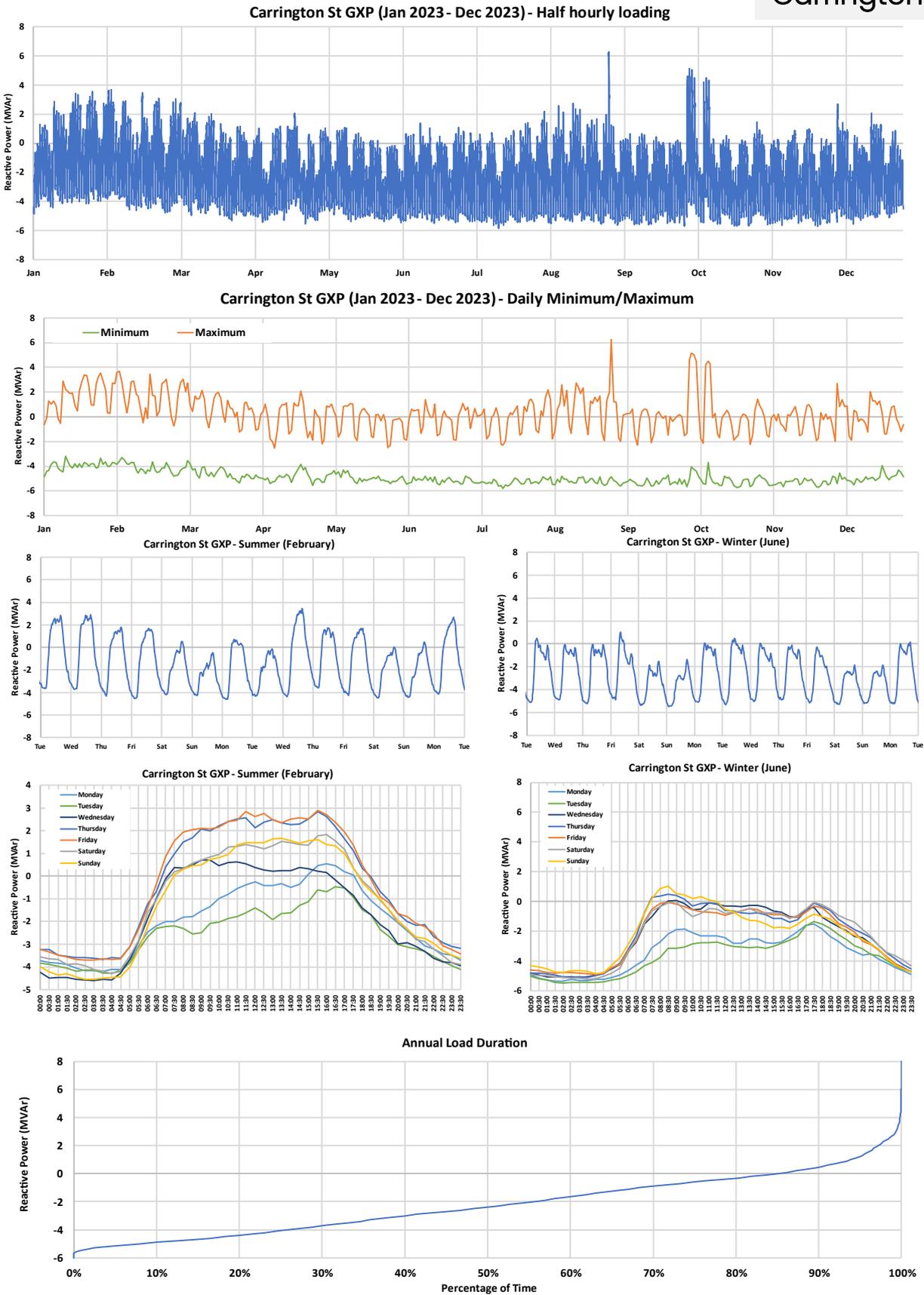


Figure 2. Carrington St: Reactive power (MVar) load characteristics.

Hāwera MVA

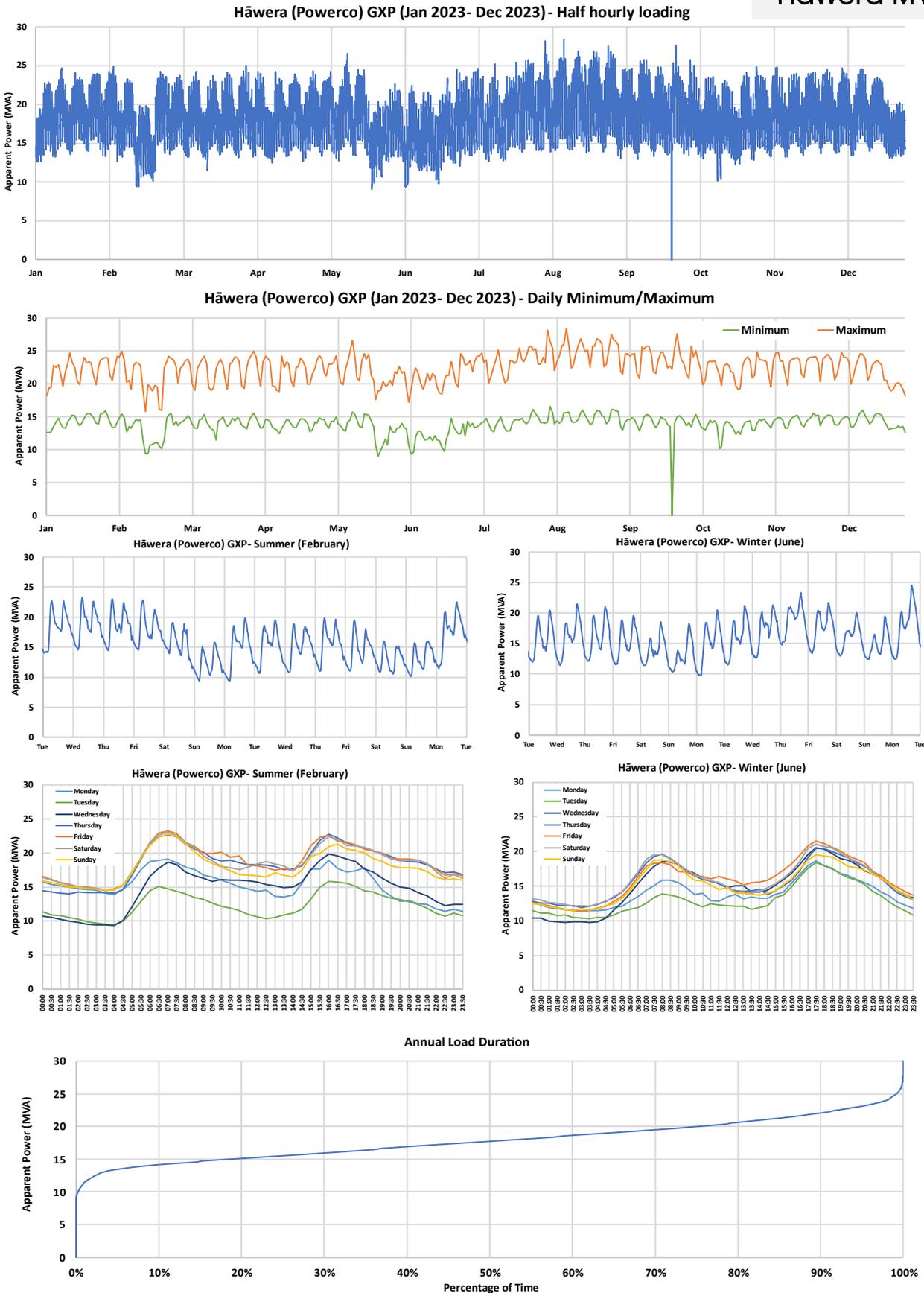


Figure 3. Hāwera: Apparent power (MVA) load characteristics.

Hāwera MVar

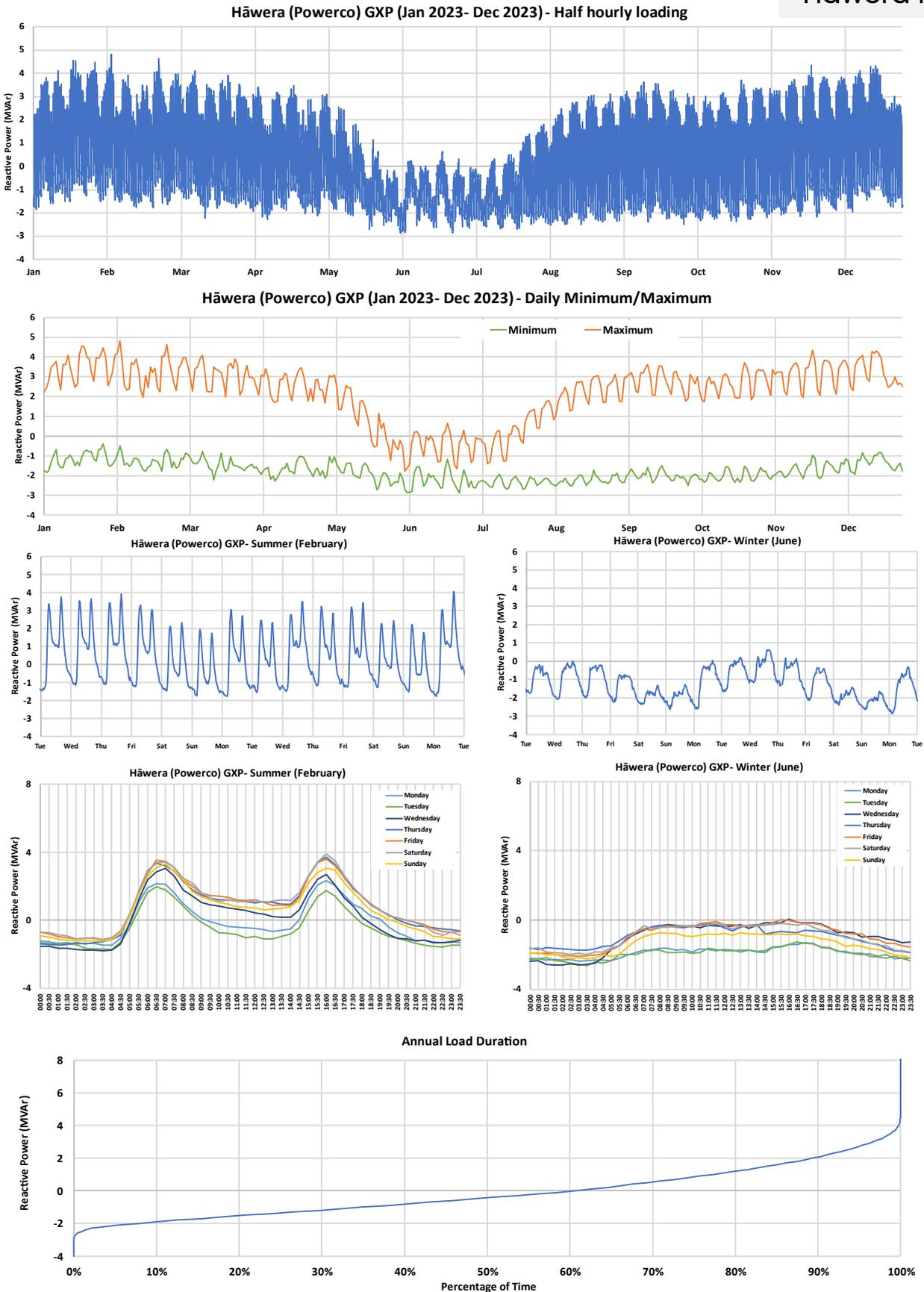


Figure 4. Hāwera: Reactive power (MVar) load characteristics.

Huirangi MVA

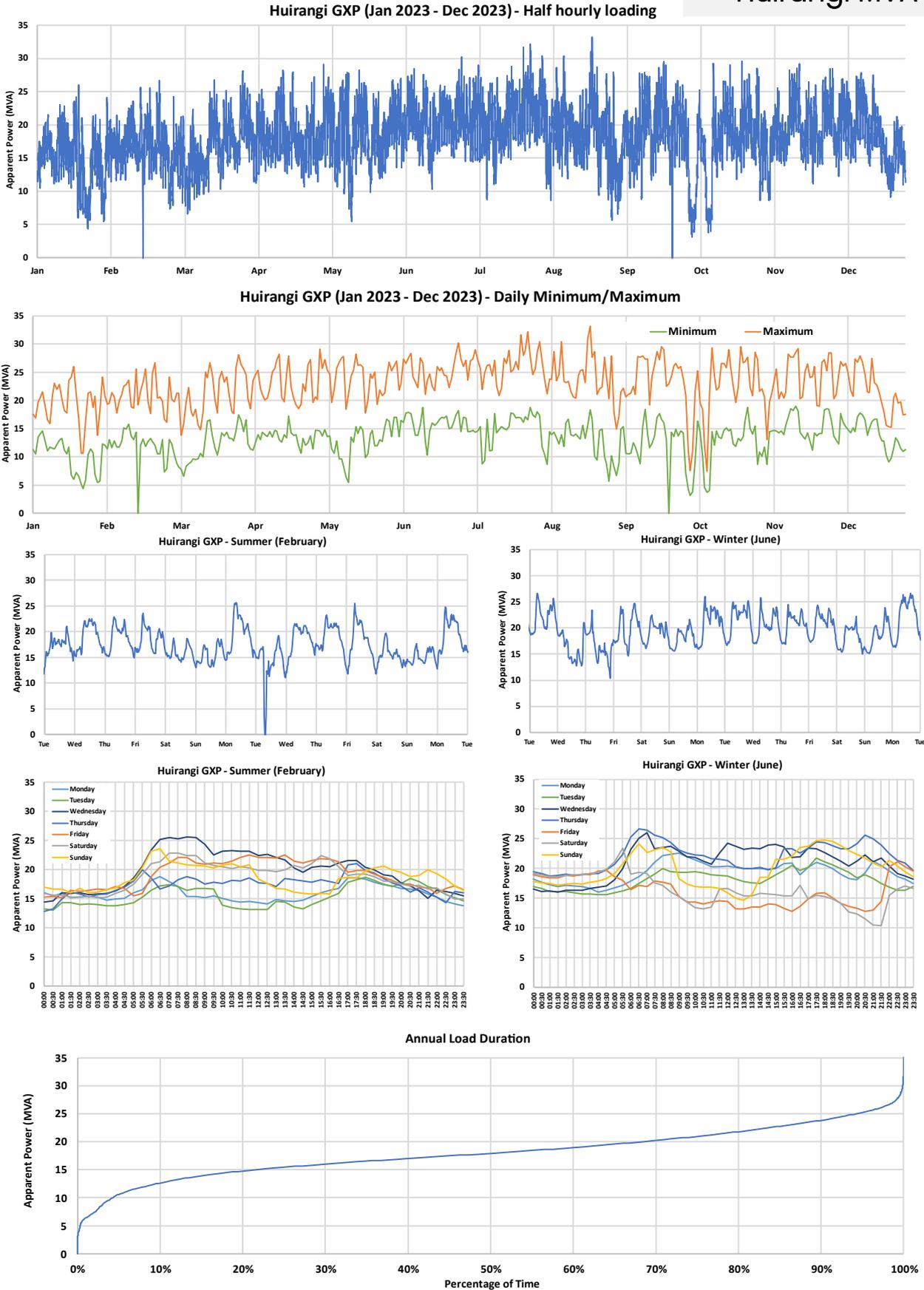


Figure 5. Huirangi: Apparent power (MVA) load characteristics.

Huirangi MVar

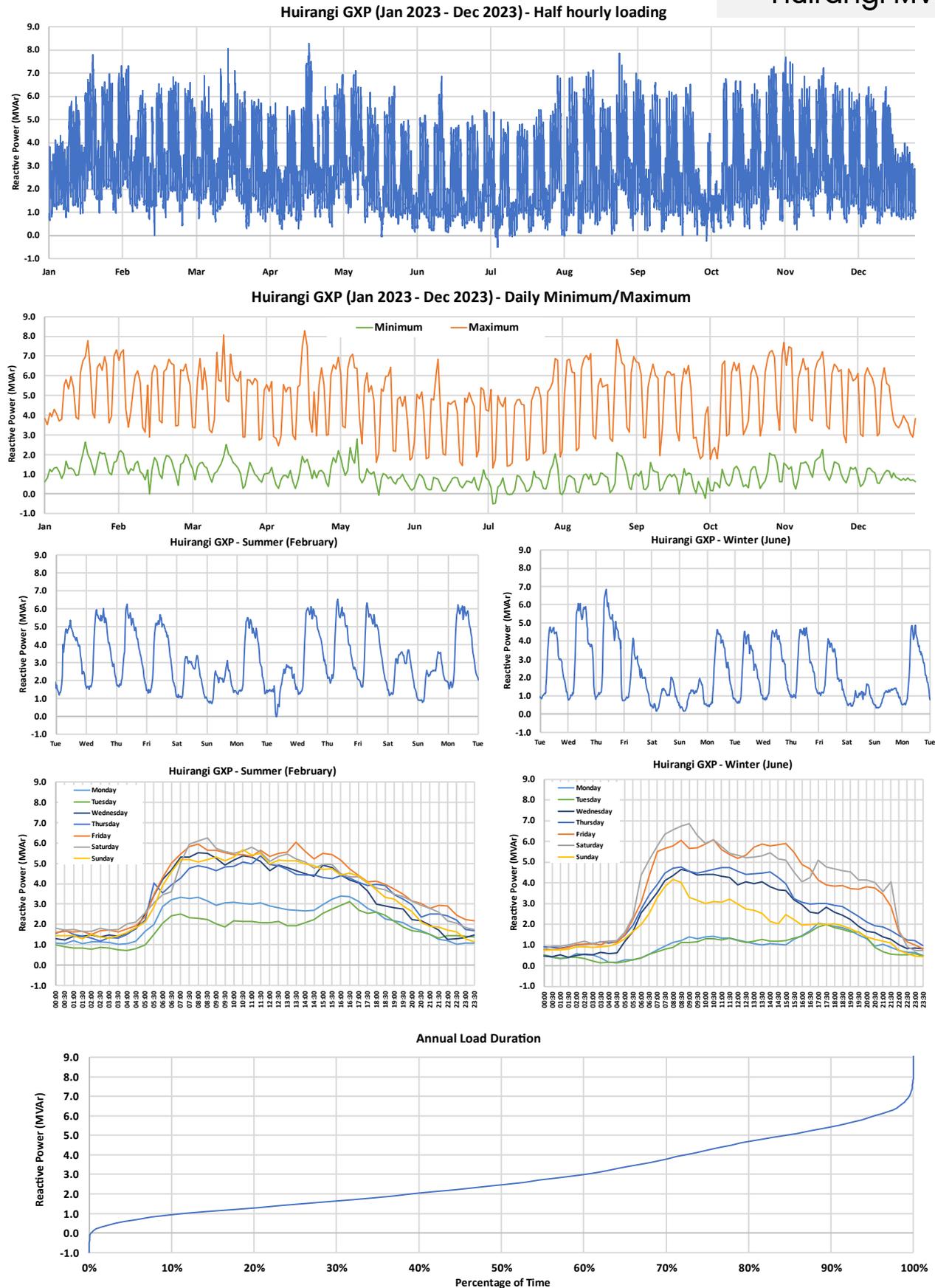


Figure 6. Huirangi: Reactive power (MVar) load characteristics.

Ōpunake MVA

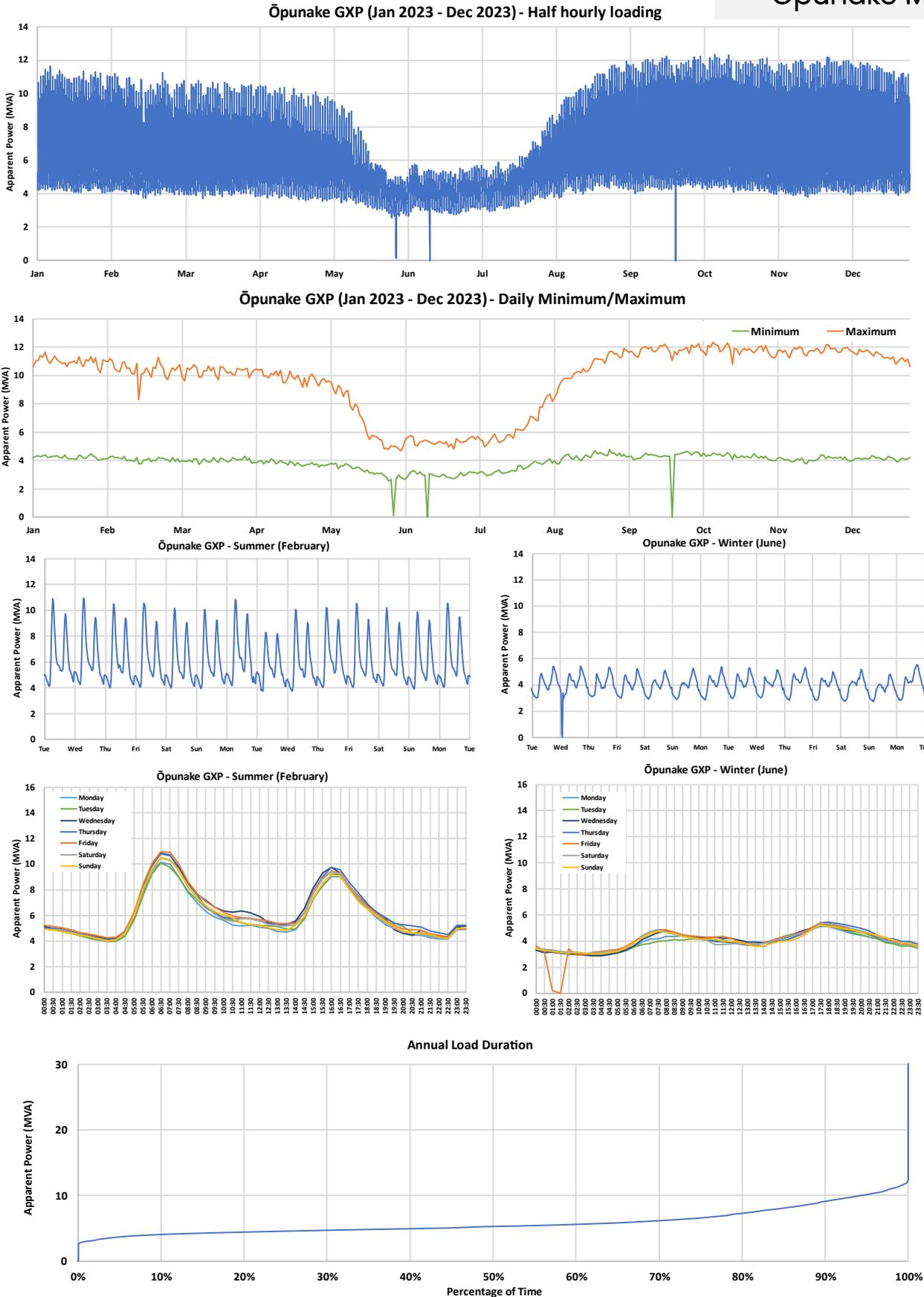


Figure 7. Ōpunake: Apparent power (MVA) load characteristics.

Ōpunake MVar

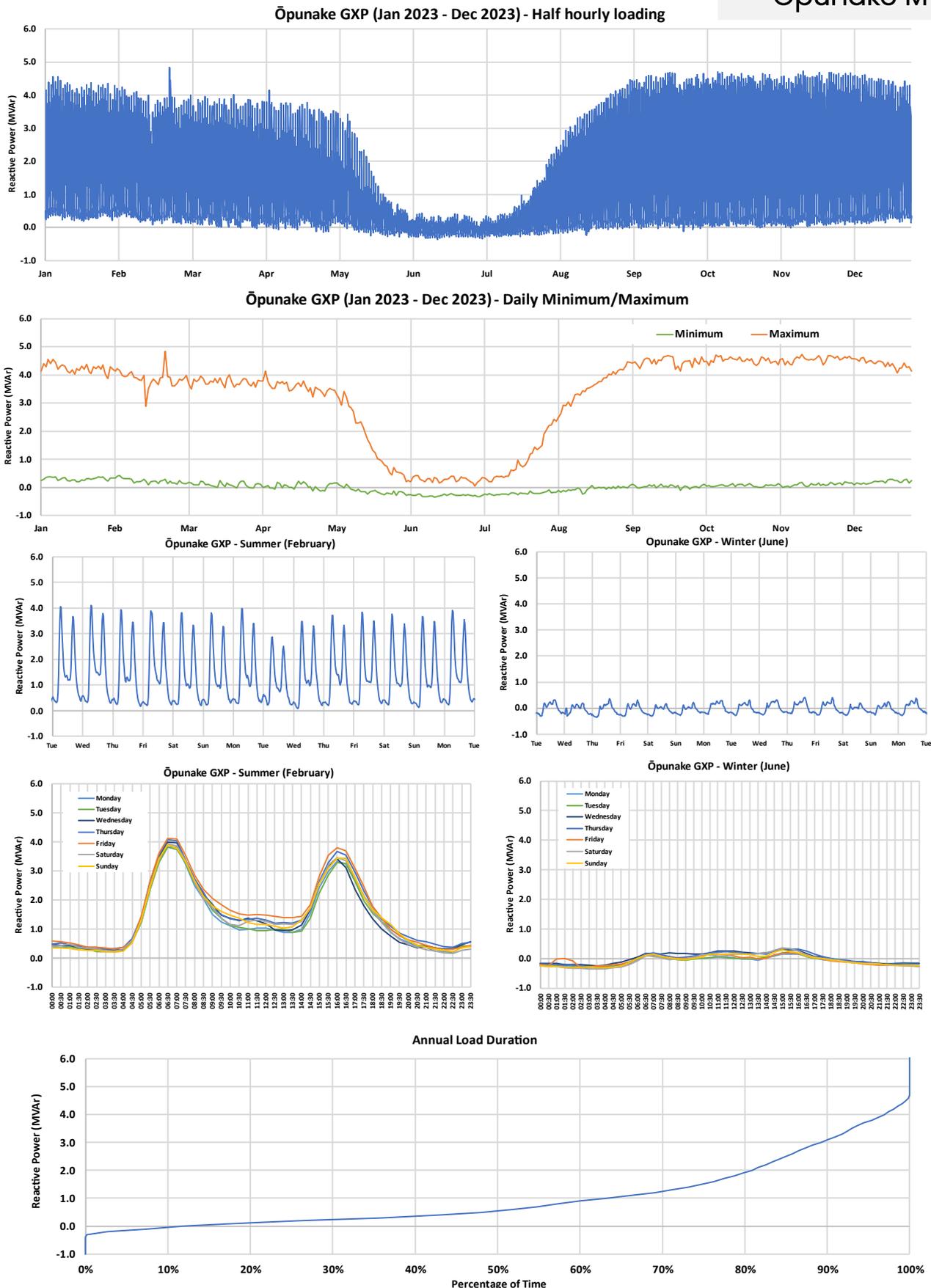


Figure 8. Ōpunake: Reactive power (MVar) load characteristics.

Stratford MVA

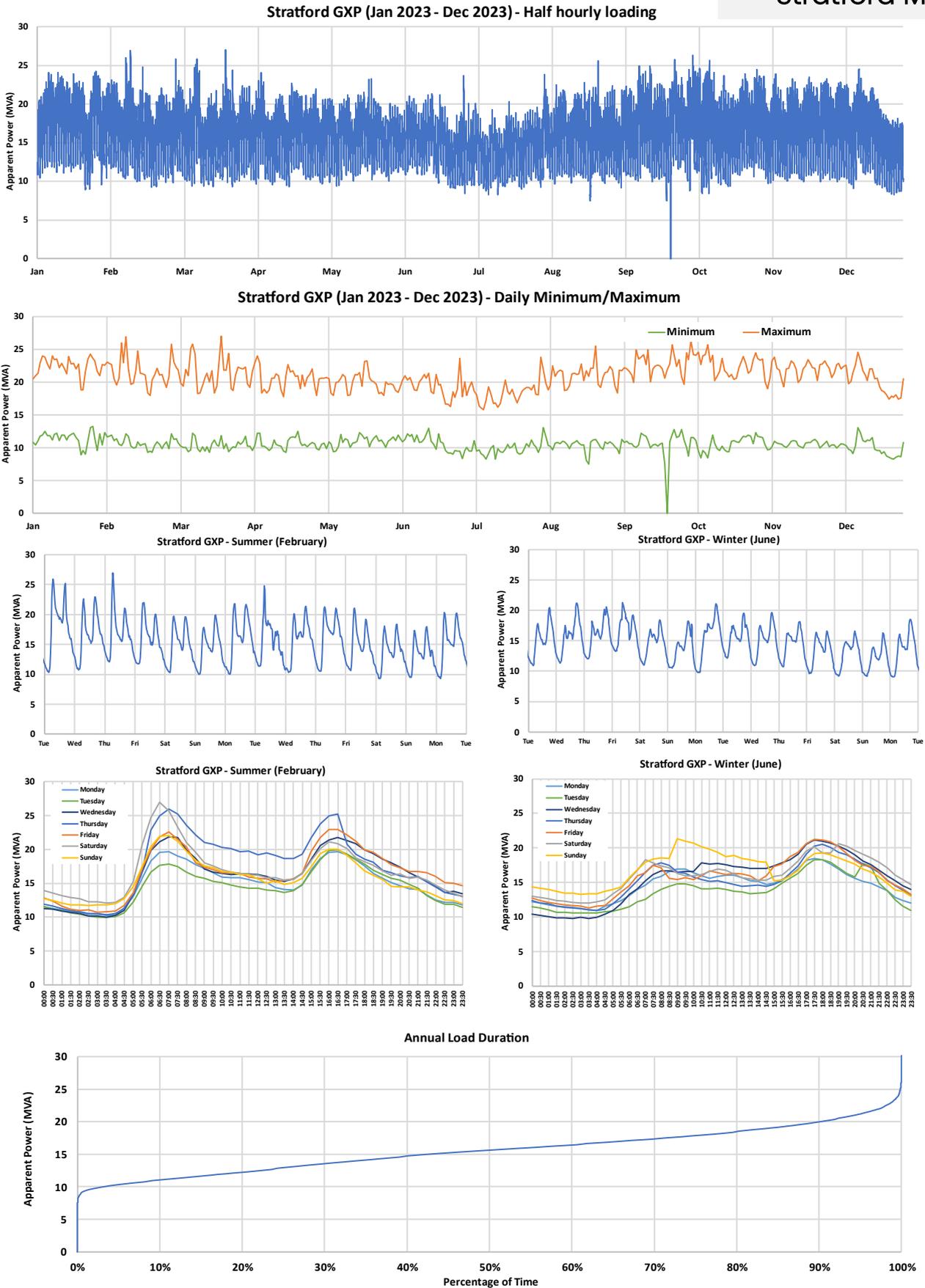


Figure 9. Stratford: Apparent power (MVA) load characteristics.

Stratford MVar

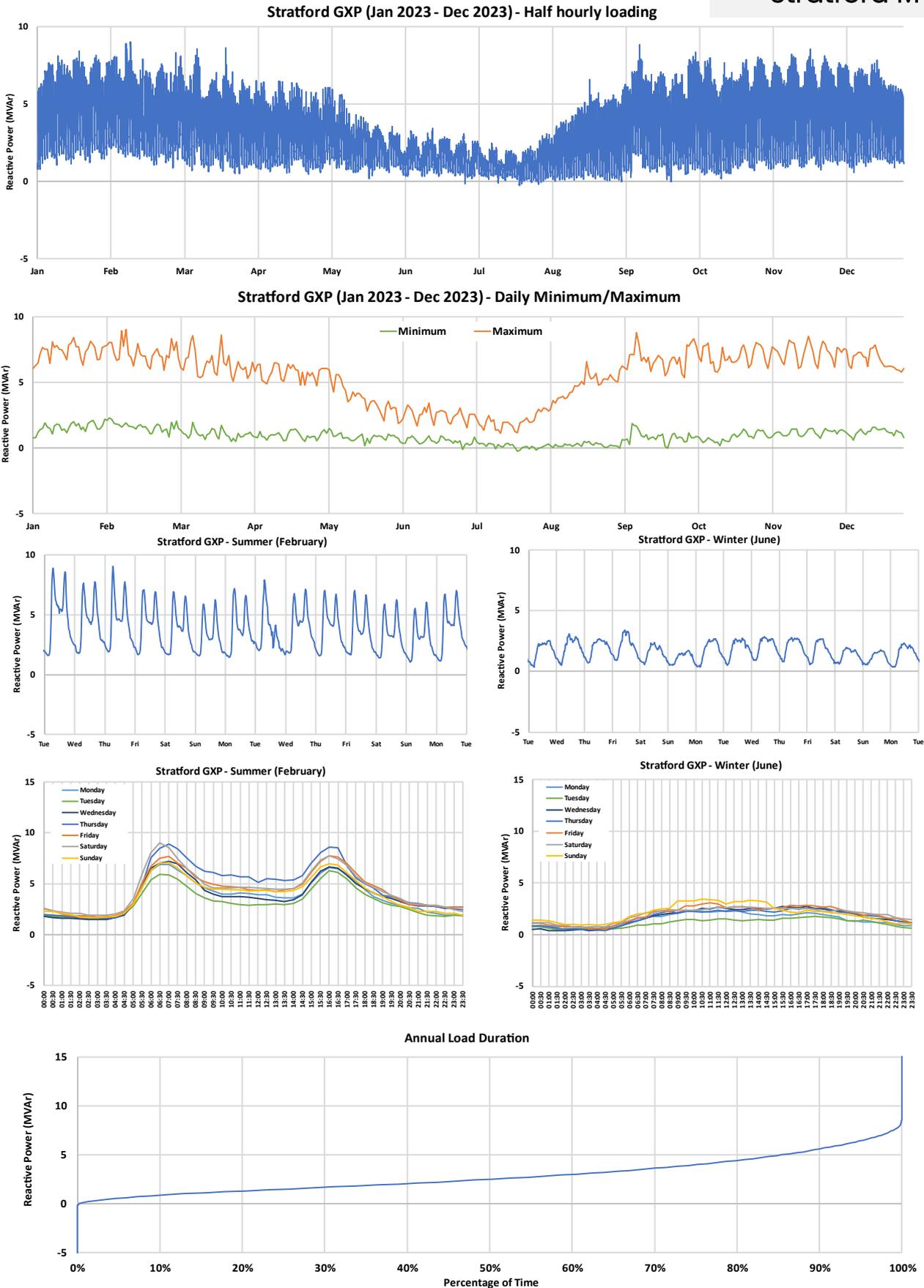


Figure 10. Stratford: Reactive power (MVar) load characteristics.

Waverley MVA

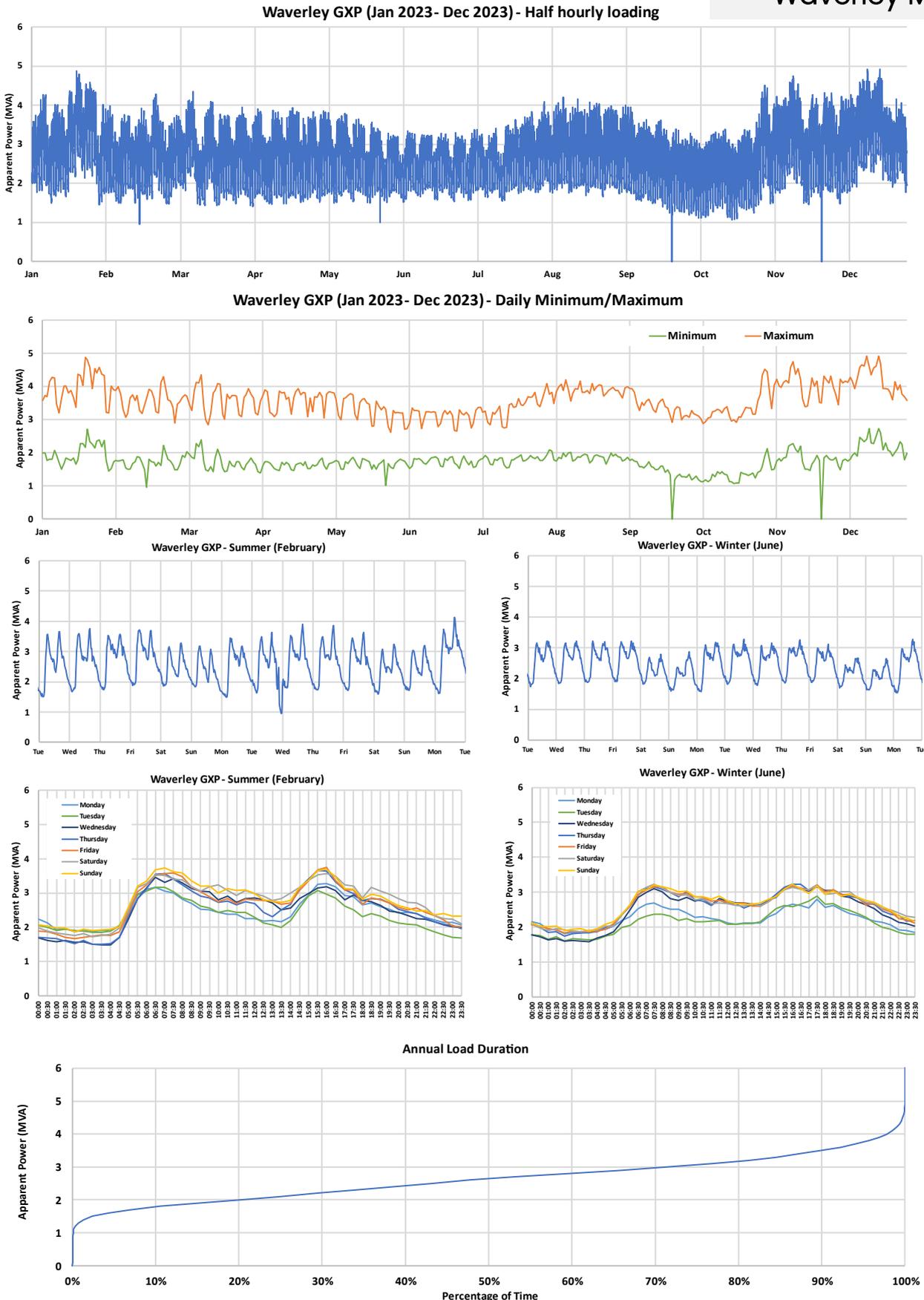


Figure 11. Waverley: Apparent power (MVA) load characteristics.

Waverley MVar

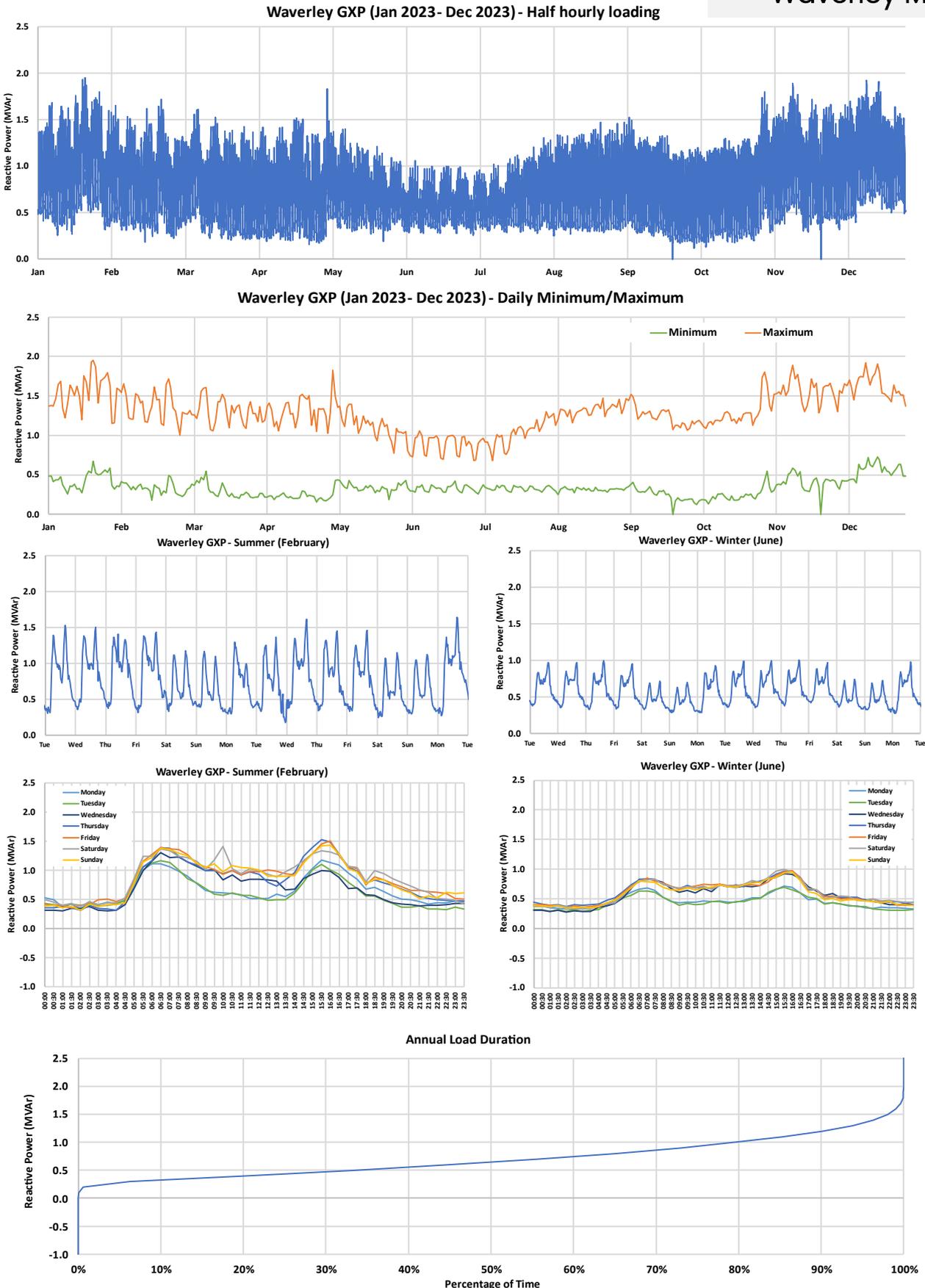


Figure 12. Waverley: Reactive power (MVar) load characteristics.

Motunui MVA

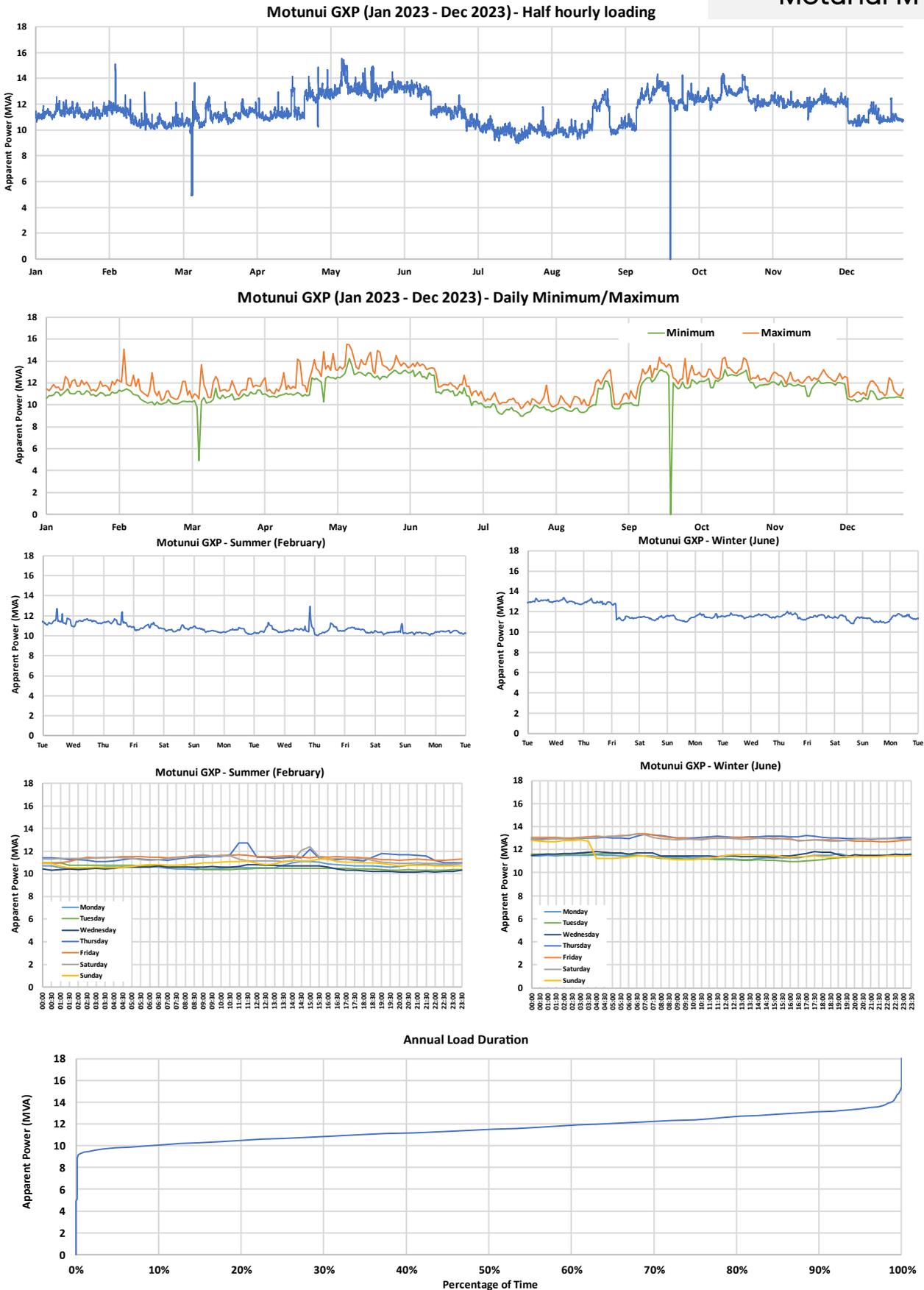


Figure 13. Motunui: Apparent power (MVA) load characteristics.

Motunui MVar

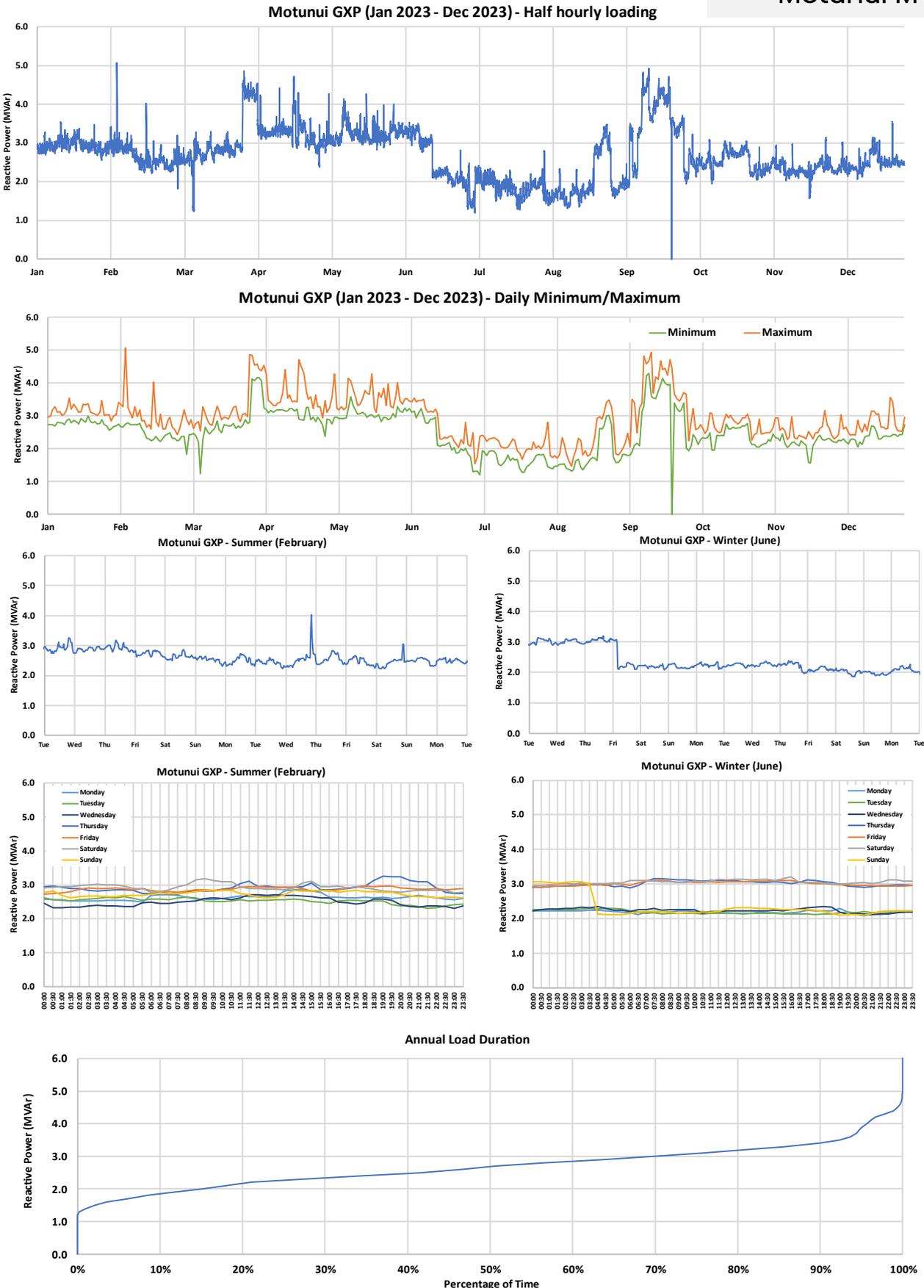


Figure 14. Motunui: Reactive power (MVar) load characteristics.

3. Zone Substations

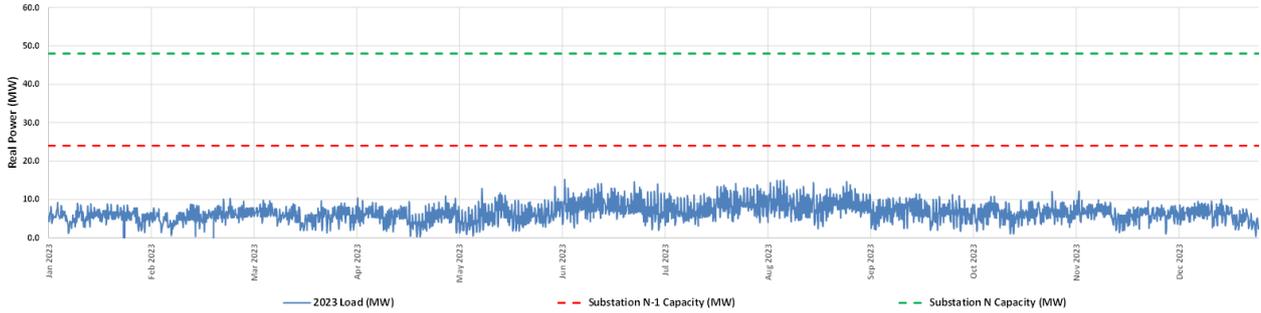
1.1 Powerco (West Region)

The characteristics of the zone substation **real power loadings** within Powerco's network are shown in the following:

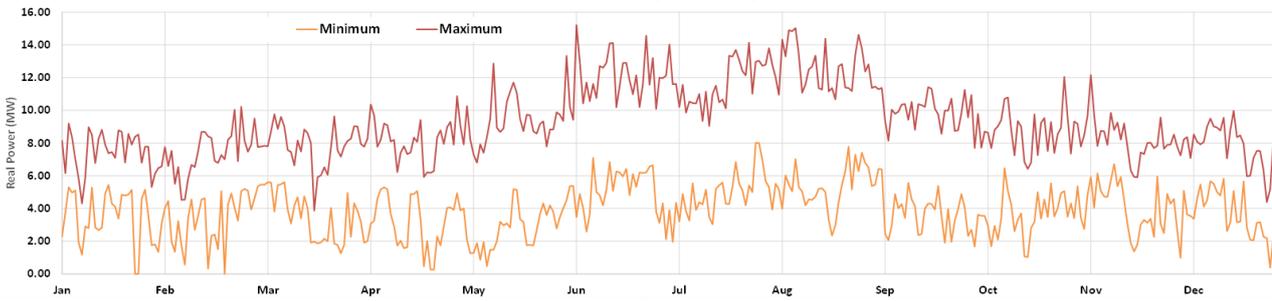
- Figure 15. Brooklands 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 16. Moturoa 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 17. City 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 18. Katere 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 19. Ōākura 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 20. Kāpuni 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 21. Manaia 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 22. Cambria 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 23. Mokoia 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 24. Livingstone 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 25. Bell Block 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 26. Waitara East 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 27. Waitara West 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 28. McKee 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 29. Inglewood 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 30. Pungarehu 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 31. Ngāriki 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 32. Tasman 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 33. Motukawa 33/6.6 kV zone substation: Real power (MW) load characteristics.
- Figure 34. Douglas 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 35. Cardiff 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 36. Cloton Road 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 37. Waihapa 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 38. Kaponga 33/11 kV zone substation: Real power (MW) load characteristics.
- Figure 39. Eltham 33/11 kV zone substation: Real power (MW) load characteristics.
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Brooklands MW

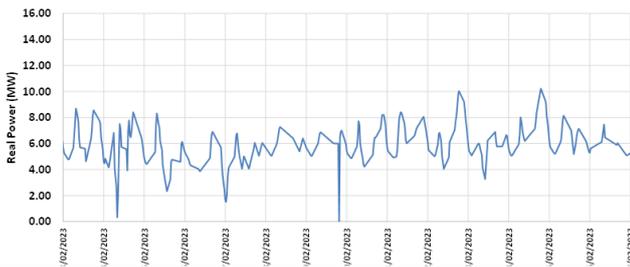
Brooklands Zone Substation (2023 year) - Half hourly loading



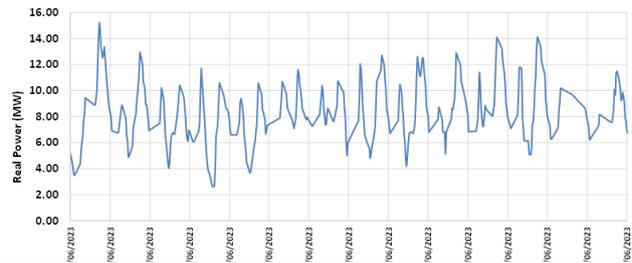
Brooklands Zone Substation (2023 year) - Daily Maximum/Minimum



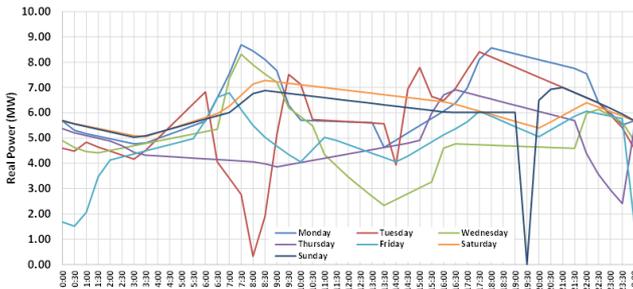
Brooklands Zone Substation (2023 year) - Summer (February)



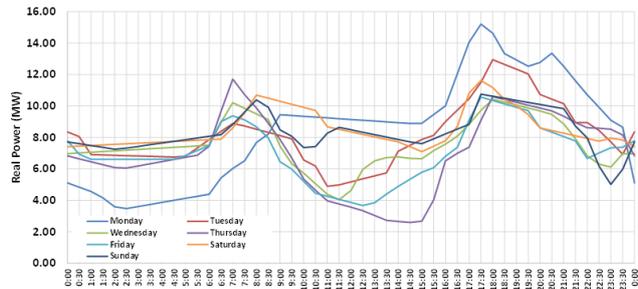
Brooklands Zone Substation (2023 year) - Winter (June)



Brooklands Zone Substation (2023 year) - Summer (February)



Brooklands Zone Substation (2023 year) - Winter (June)



Brooklands Zone Substation (2023 year) - Load Duration Curve

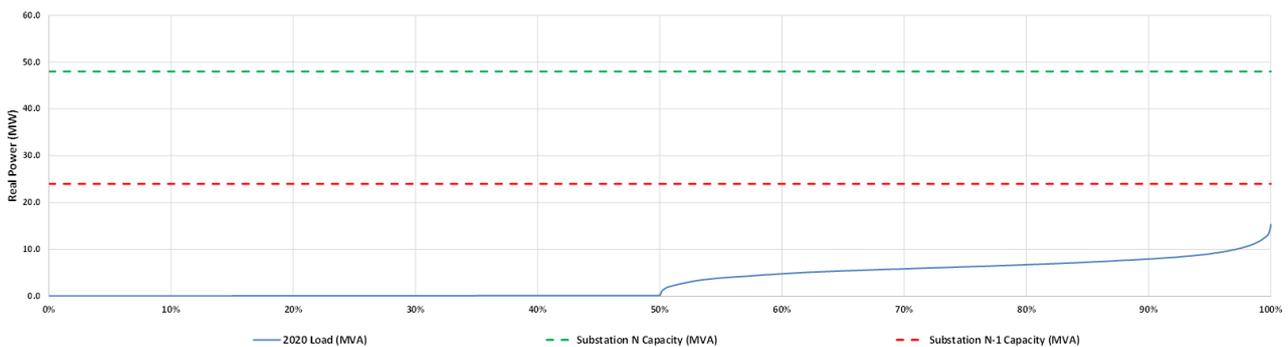
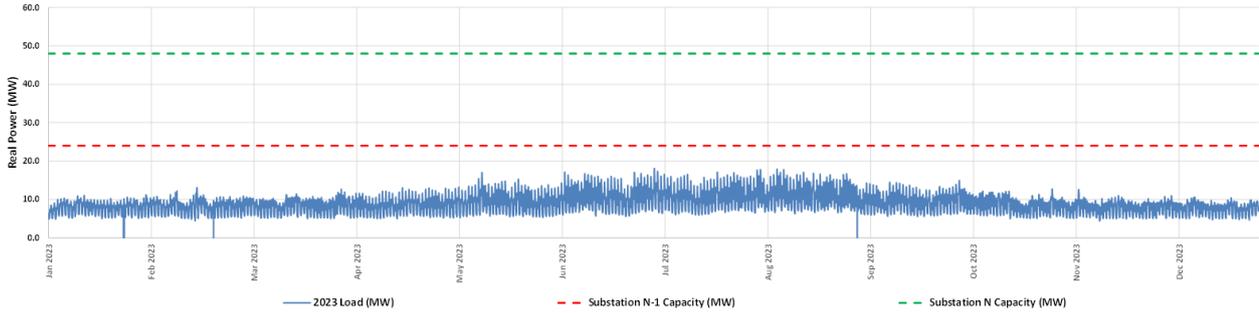


Figure 15. Brooklands 33/11 kV zone substation: Real power (MW) load characteristics.

Moturoa MW

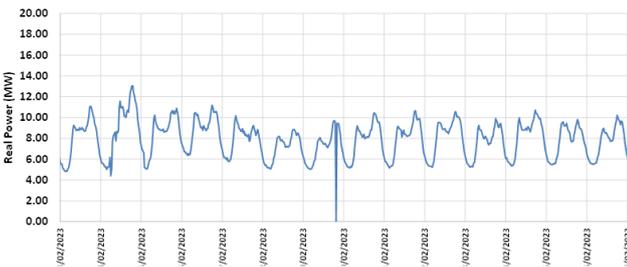
Moturoa Zone Substation (2023 year) - Half hourly loading



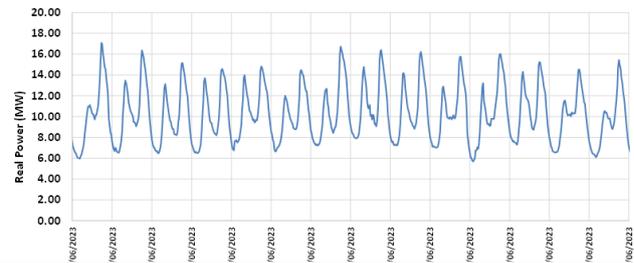
Moturoa Zone Substation (2023 year) - Daily Maximum/Minimum



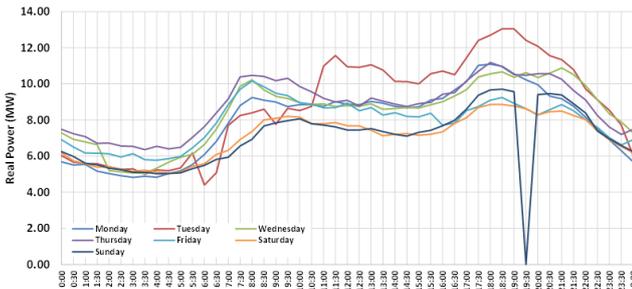
Moturoa Zone Substation (2023 year) - Summer (February)



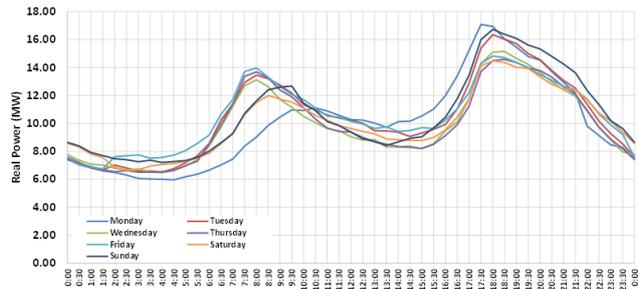
Moturoa Zone Substation (2023 year) - Winter (June)



Moturoa Zone Substation (2023 year) - Summer (February)



Moturoa Zone Substation (2023 year) - Winter (June)



Moturoa Zone Substation (2023 year) - Load Duration Curve

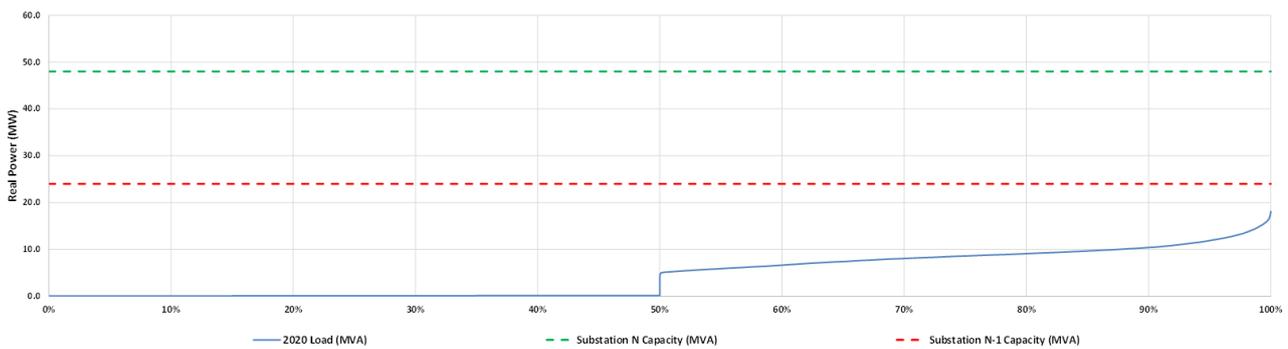
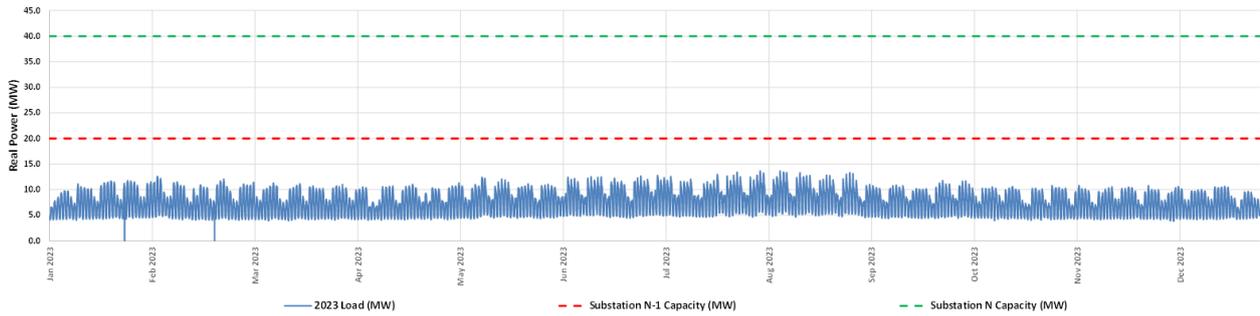


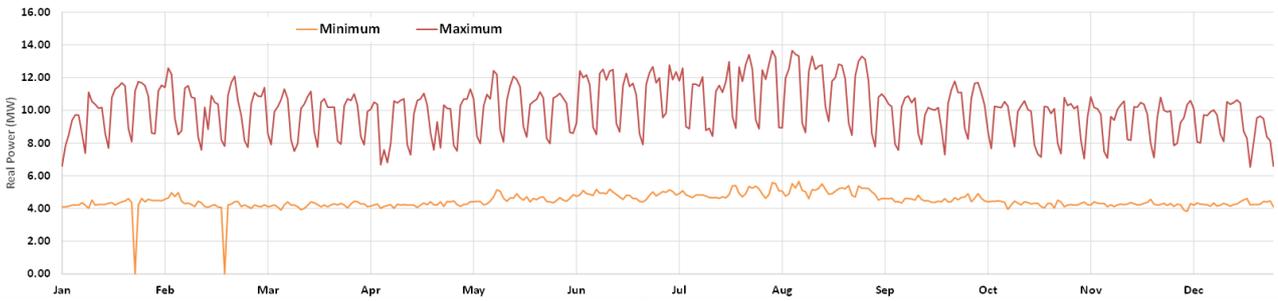
Figure 16. Moturoa 33/11 kV zone substation: Real power (MW) load characteristics.

City MW

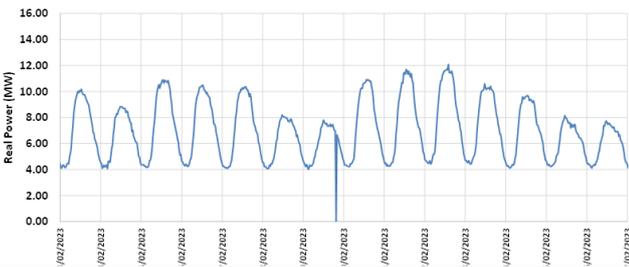
City Zone Substation (2023 year) - Half hourly loading



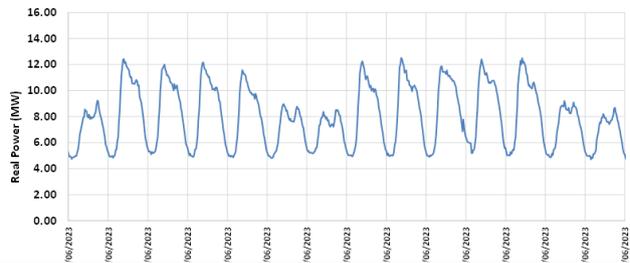
City Zone Substation (2023 year) - Daily Maximum/Minimum



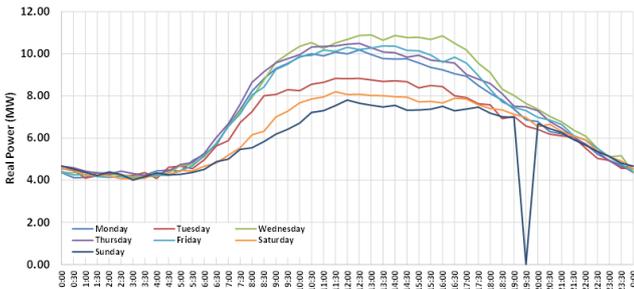
City Zone Substation (2023 year) - Summer (February)



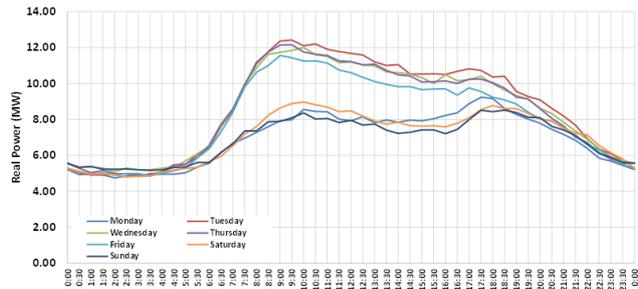
City Zone Substation (2023 year) - Winter (June)



City Zone Substation (2023 year) - Summer (February)



City Zone Substation (2023 year) - Winter (June)



City Zone Substation (2023 year) - Load Duration Curve

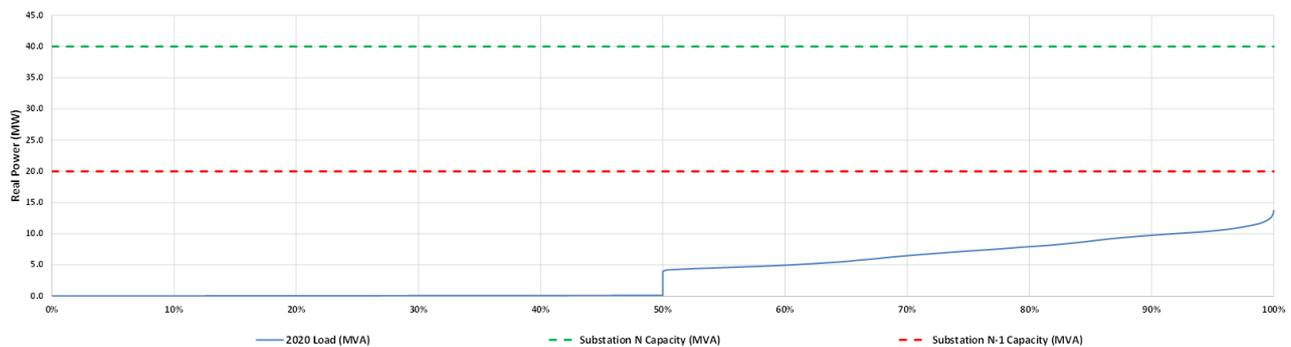
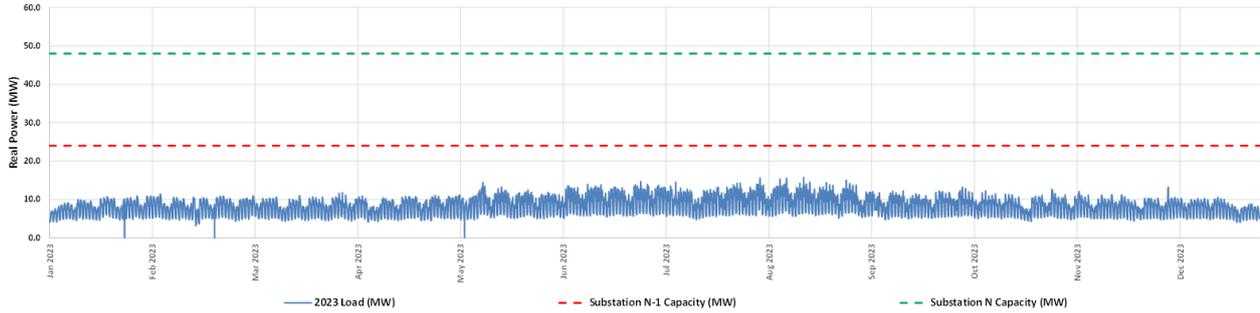


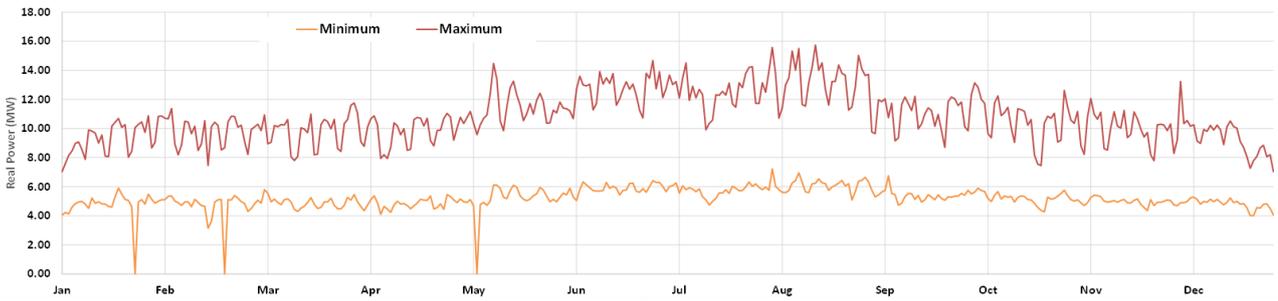
Figure 17. City 33/11 kV zone substation: Real power (MW) load characteristics.

Katere MW

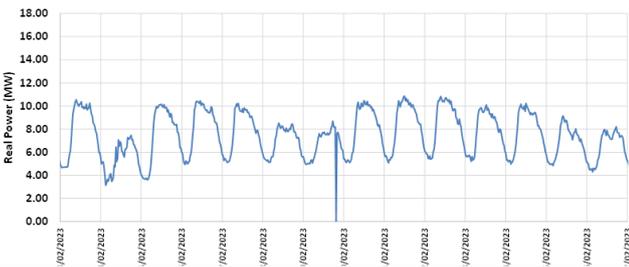
Katere Zone Substation (2023 year) - Half hourly loading



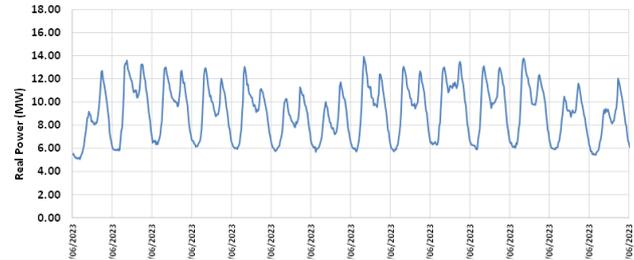
Katere Zone Substation (2023 year) - Daily Maximum/Minimum



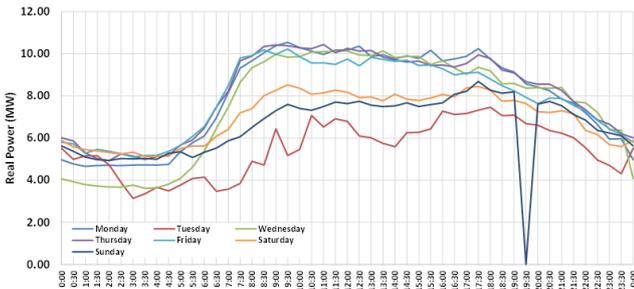
Katere Zone Substation (2023 year) - Summer (February)



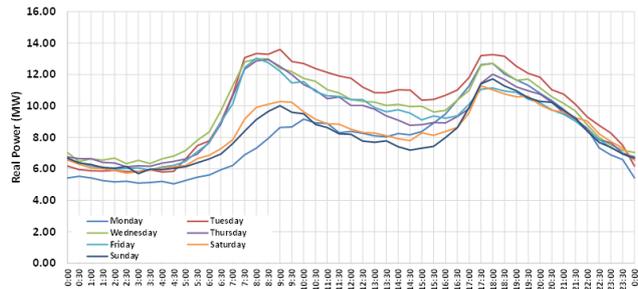
Katere Zone Substation (2023 year) - Winter (June)



Katere Zone Substation (2023 year) - Summer (February)



Katere Zone Substation (2023 year) - Winter (June)



Katere Zone Substation (2023 year) - Load Duration Curve

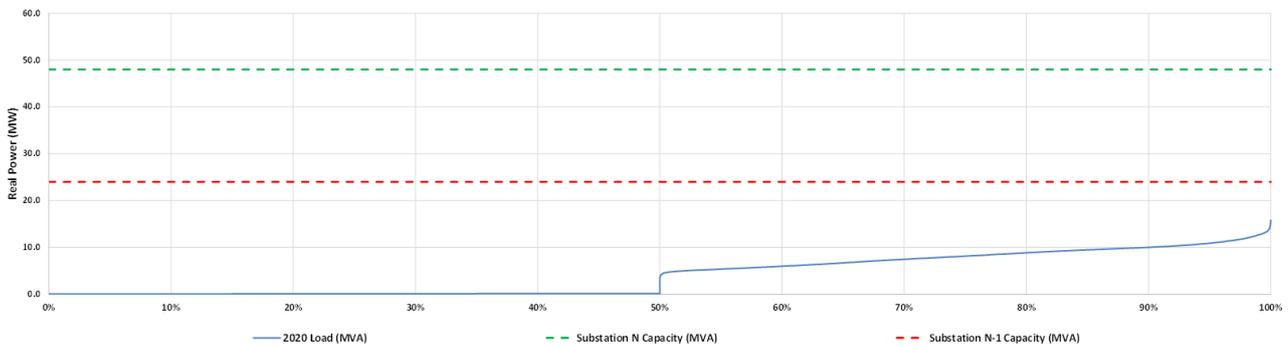
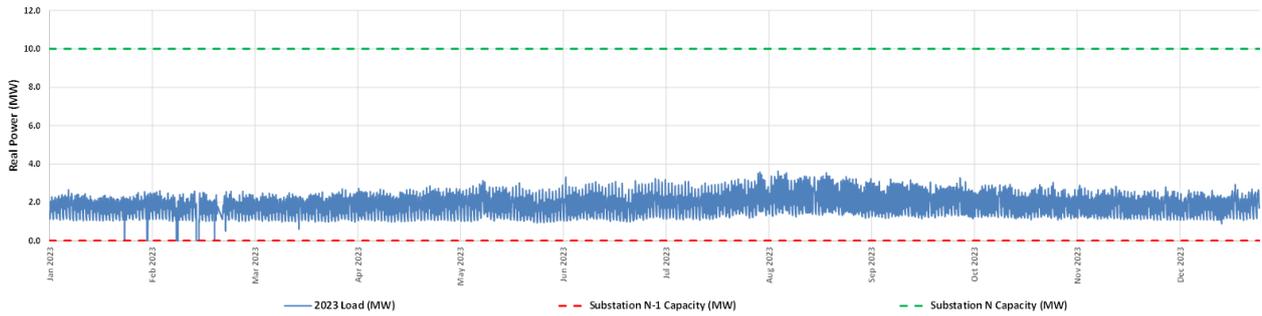


Figure 18. Katere 33/11 kV zone substation: Real power (MW) load characteristics.

Ōākura MW

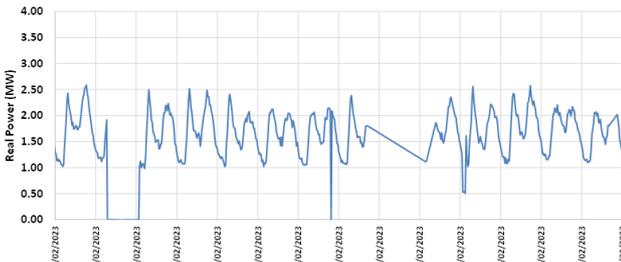
Ōākura Zone Substation (2023 year) - Half hourly loading



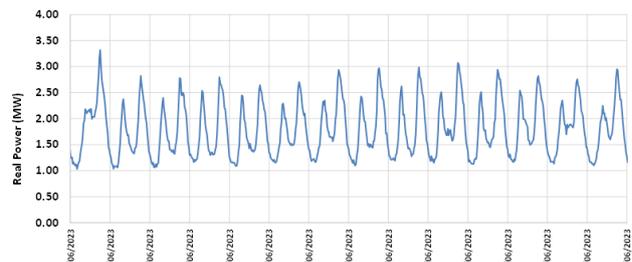
Ōākura Zone Substation (2023 year) - Daily Maximum/Minimum



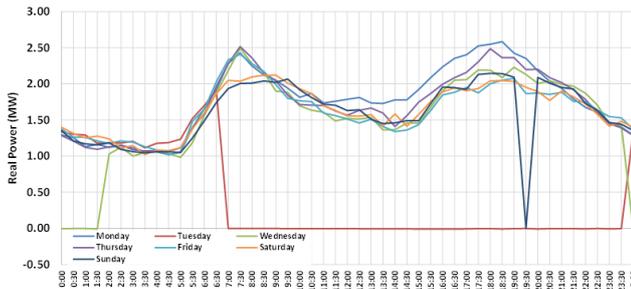
Ōākura Zone Substation (2023 year) - Summer (February)



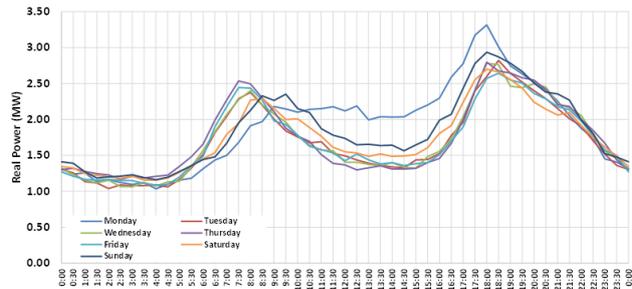
Ōākura Zone Substation (2023 year) - Winter (June)



Ōākura Zone Substation (2023 year) - Summer (February)



Ōākura Zone Substation (2023 year) - Winter (June)



Ōākura Zone Substation (2023 year) - Load Duration Curve

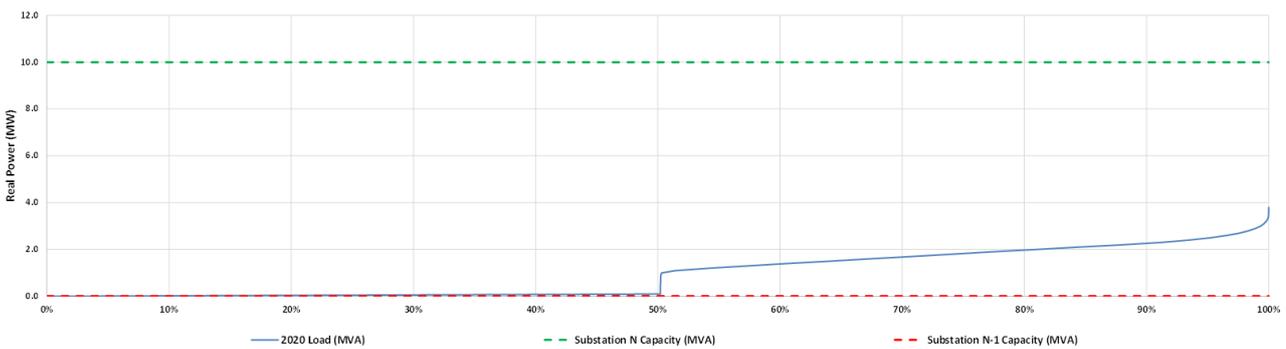
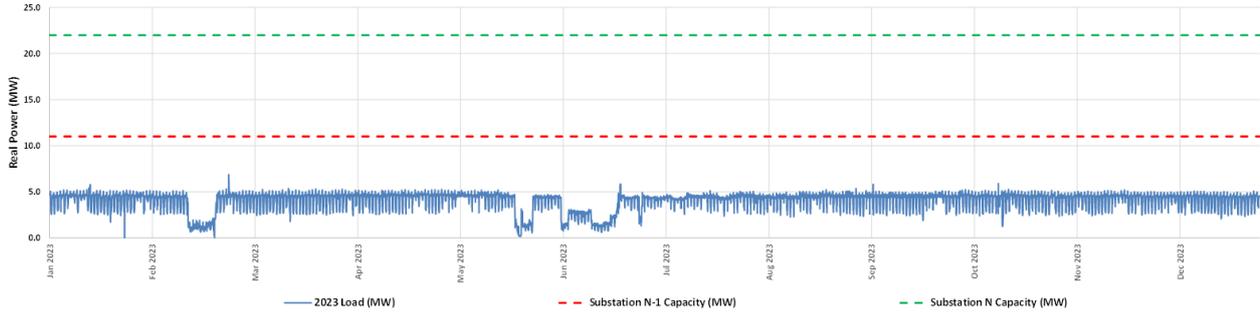


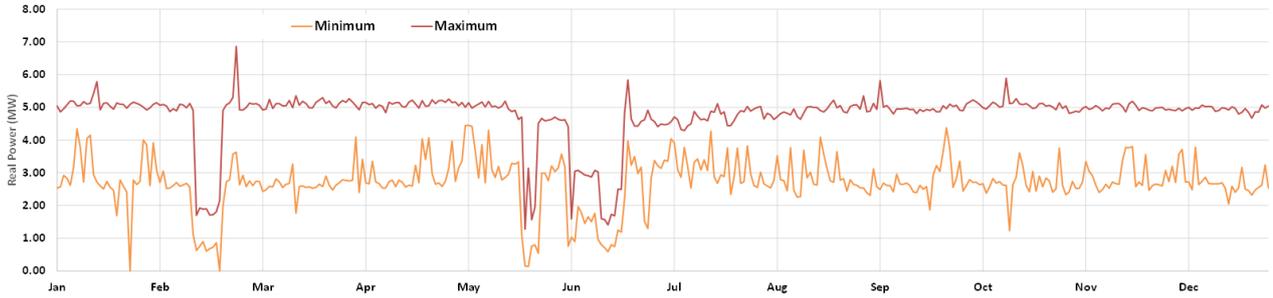
Figure 19. Ōākura 33/11 kV zone substation: Real power (MW) load characteristics.

Kāpuni MW

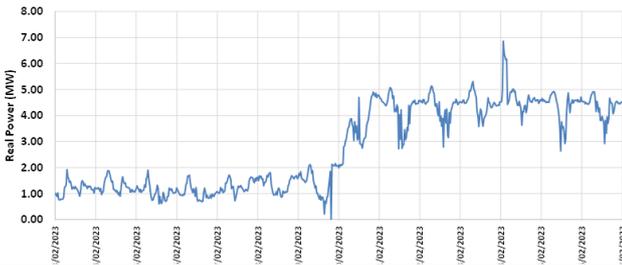
Kāpuni Zone Substation (2023 year) - Half hourly loading



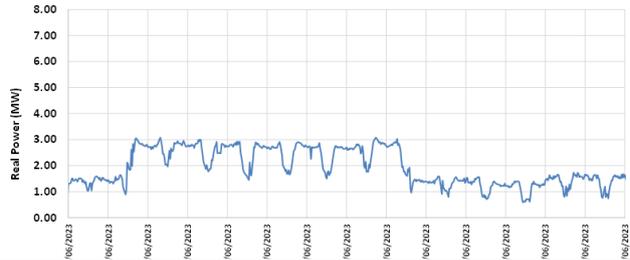
Kāpuni Zone Substation (2023 year) - Daily Maximum/Minimum



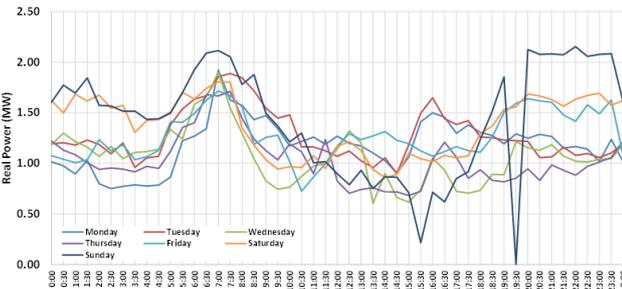
Kāpuni Zone Substation (2023 year) - Summer (February)



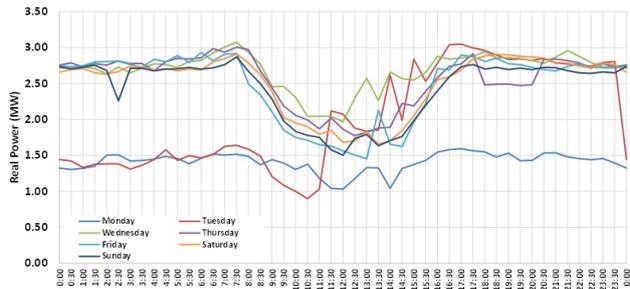
Kāpuni Zone Substation (2023 year) - Winter (June)



Kāpuni Zone Substation (2023 year) - Summer (February)



Kāpuni Zone Substation (2023 year) - Winter (June)



Kāpuni Zone Substation (2023 year) - Load Duration Curve

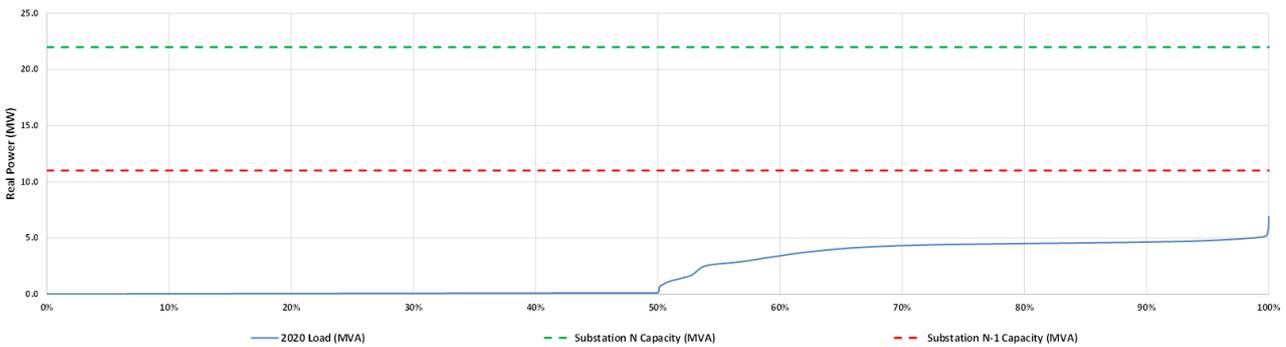
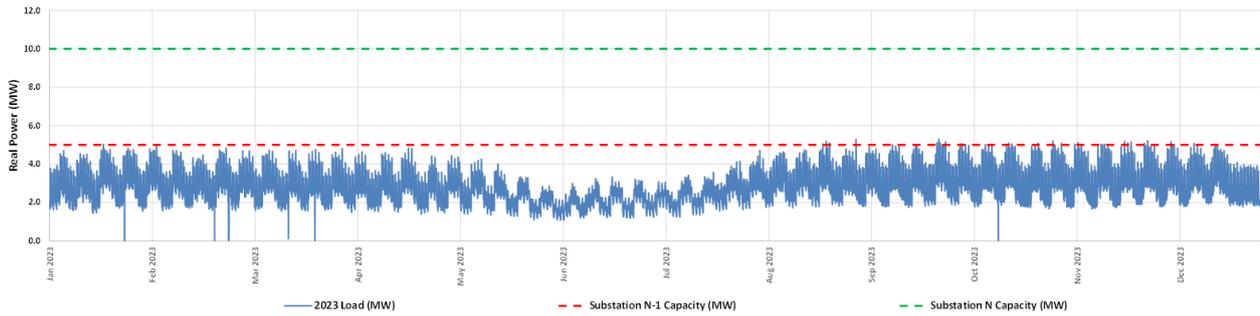


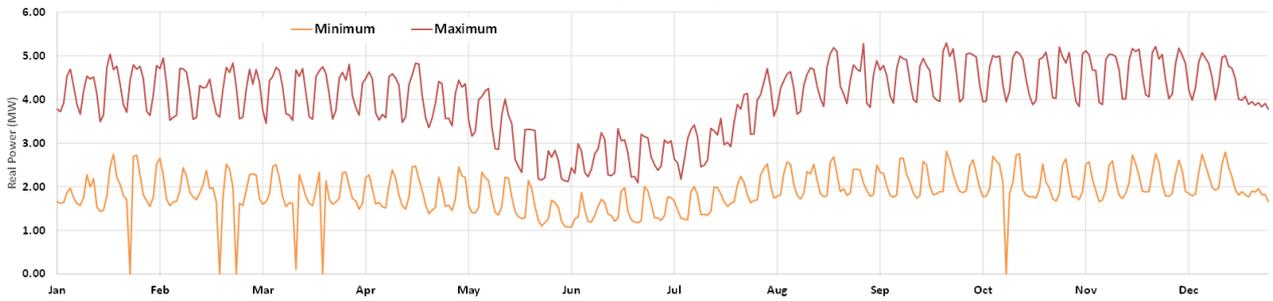
Figure 20. Kāpuni 33/11 kV zone substation: Real power (MW) load characteristics.

Manaia MW

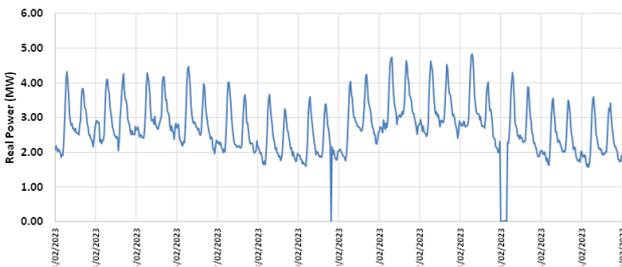
Manaia Zone Substation (2023 year) - Half hourly loading



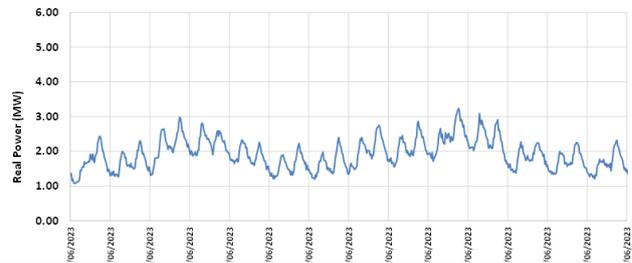
Manaia Zone Substation (2023 year) - Daily Maximum/Minimum



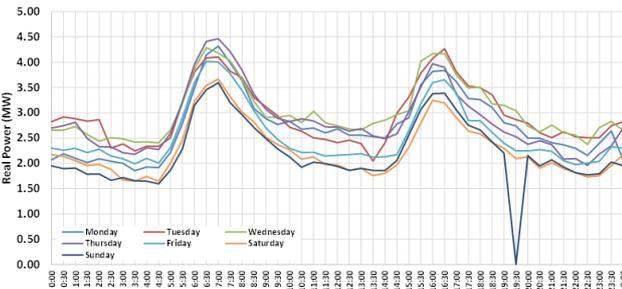
Manaia Zone Substation (2023 year) - Summer (February)



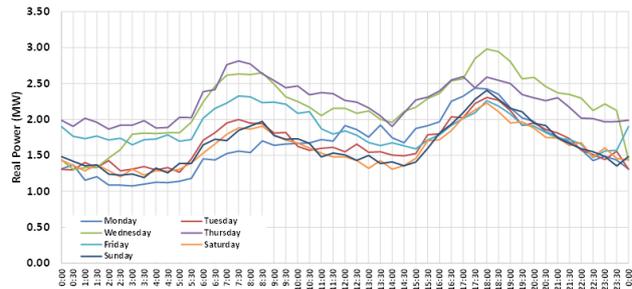
Manaia Zone Substation (2023 year) - Winter (June)



Manaia Zone Substation (2023 year) - Summer (February)



Manaia Zone Substation (2023 year) - Winter (June)



Manaia Zone Substation (2023 year) - Load Duration Curve

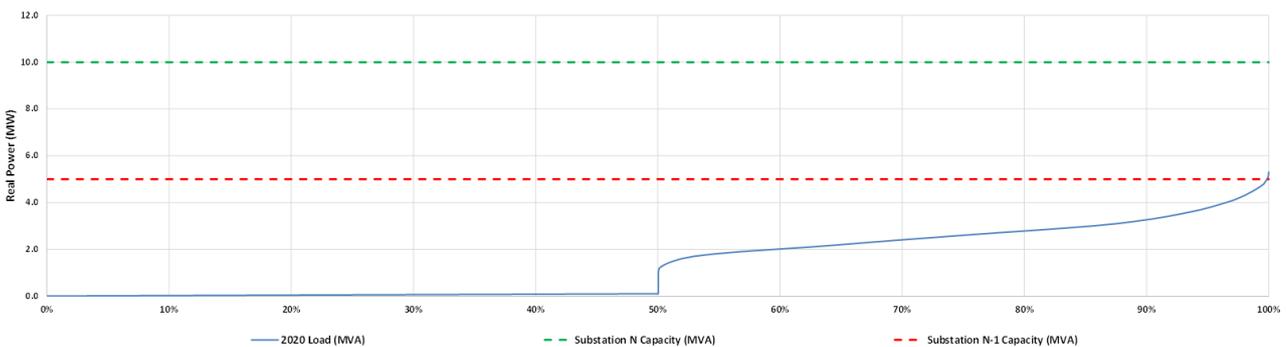
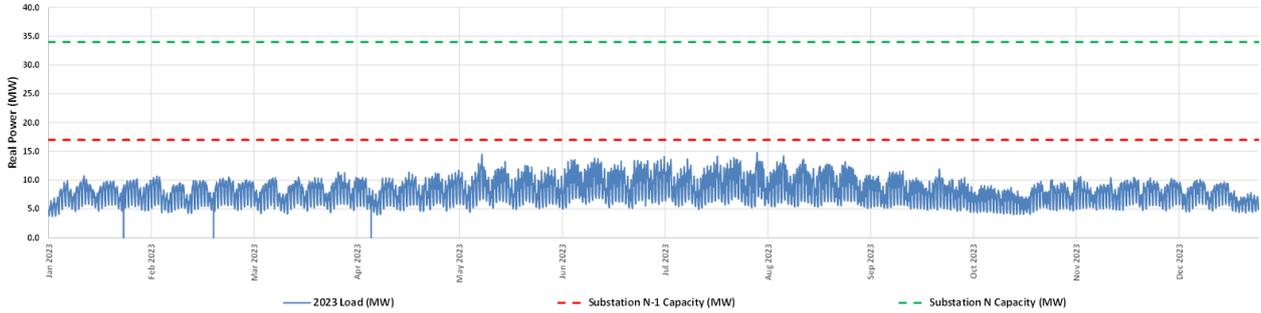


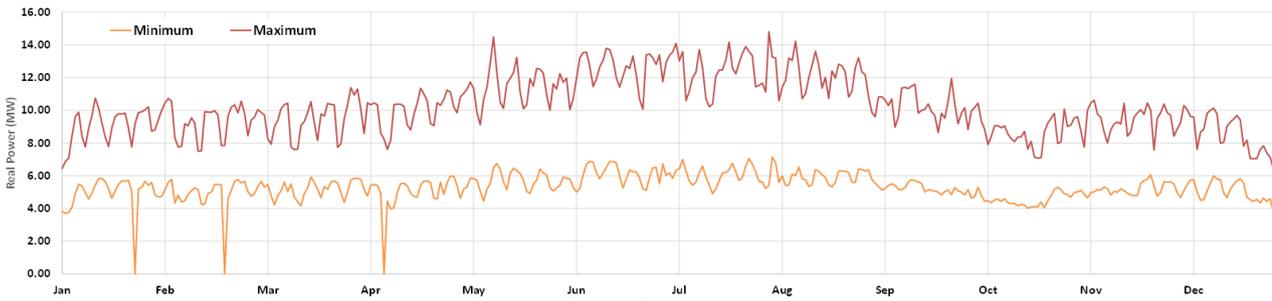
Figure 21. Manaia 33/11 kV zone substation: Real power (MW) load characteristics.

Cambria MW

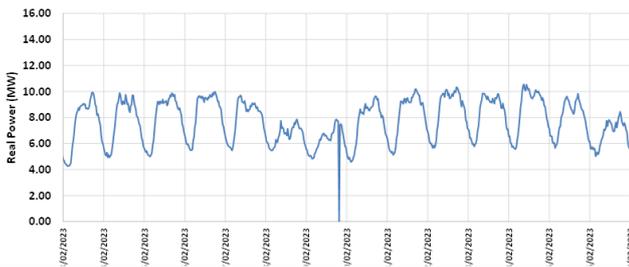
Cambria Zone Substation (2023 year) - Half hourly loading



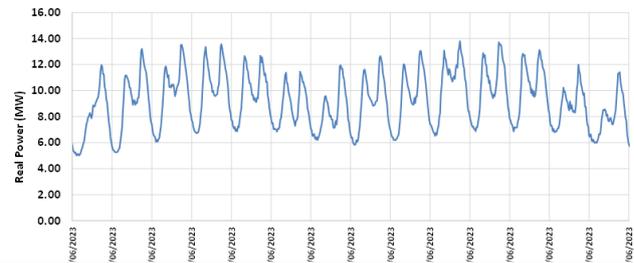
Cambria Zone Substation (2023 year) - Daily Maximum/Minimum



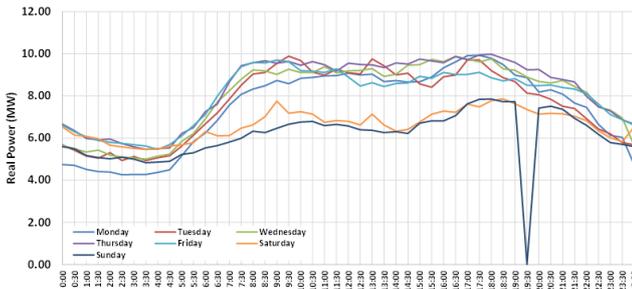
Cambria Zone Substation (2023 year) - Summer (February)



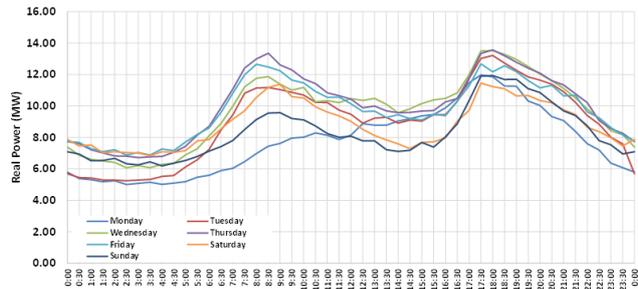
Cambria Zone Substation (2023 year) - Winter (June)



Cambria Zone Substation (2023 year) - Summer (February)



Cambria Zone Substation (2023 year) - Winter (June)



Cambria Zone Substation (2023 year) - Load Duration Curve

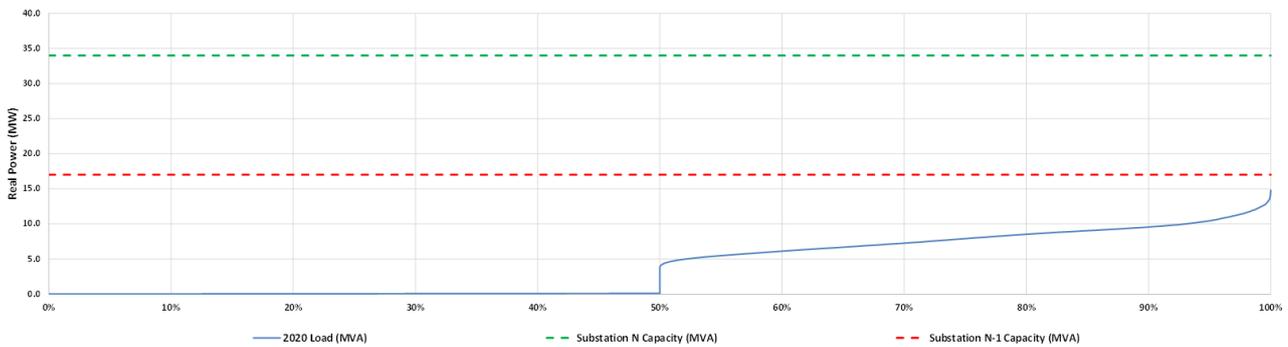
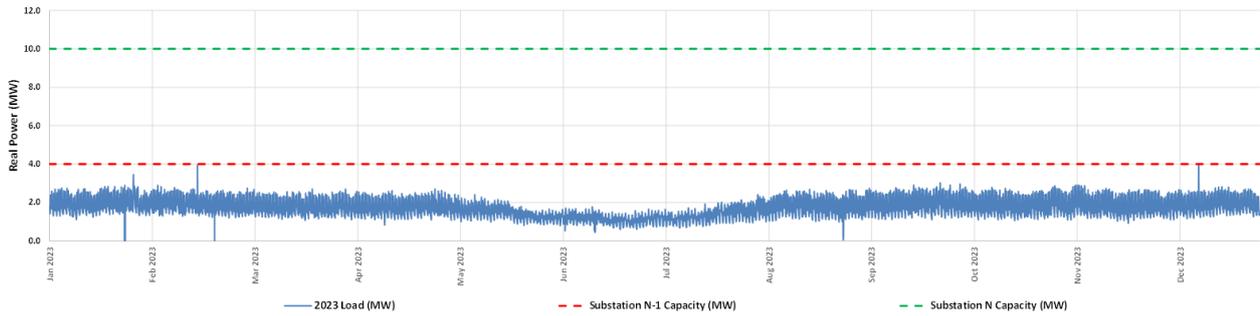


Figure 22. Cambria 33/11 kV zone substation: Real power (MW) load characteristics.

Mokoia MW

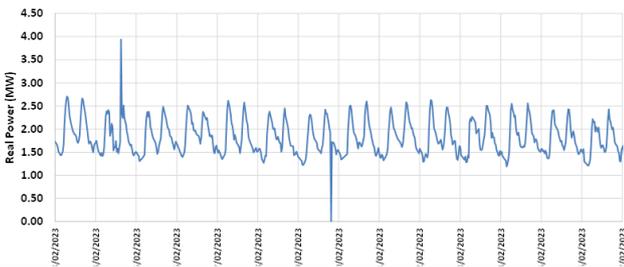
Mokoia Zone Substation (2023 year) - Half hourly loading



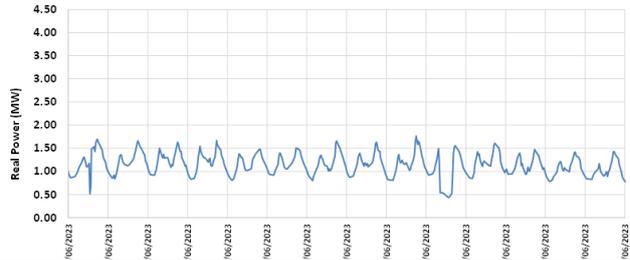
Mokoia Zone Substation (2023 year) - Daily Maximum/Minimum



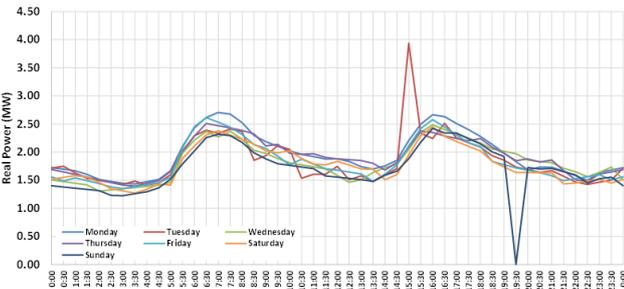
Mokoia Zone Substation (2023 year) - Summer (February)



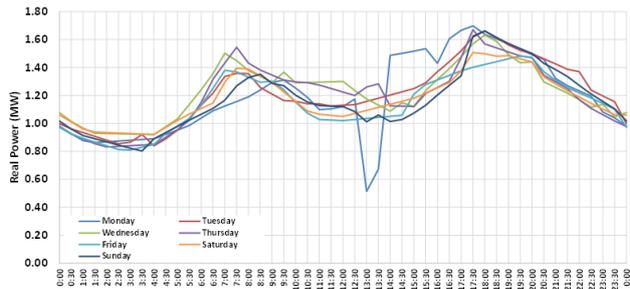
Mokoia Zone Substation (2023 year) - Winter (June)



Mokoia Zone Substation (2023 year) - Summer (February)



Mokoia Zone Substation (2023 year) - Winter (June)



Mokoia Zone Substation (2023 year) - Load Duration Curve

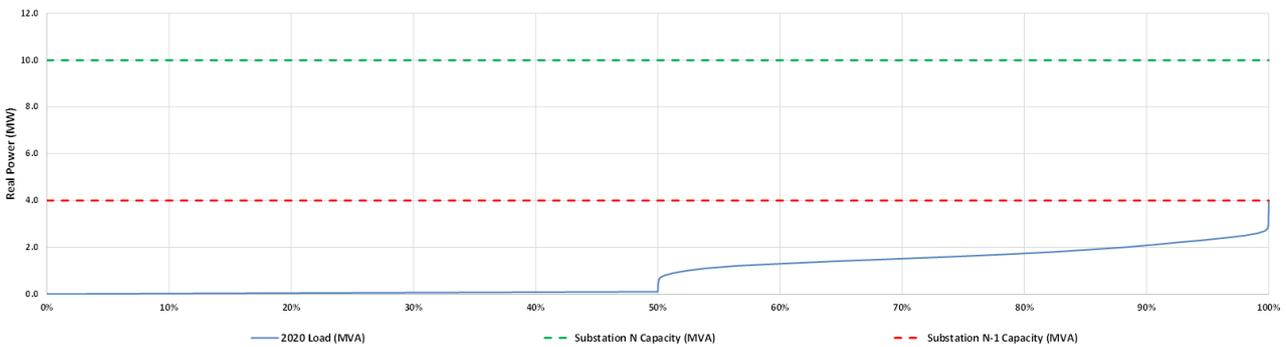
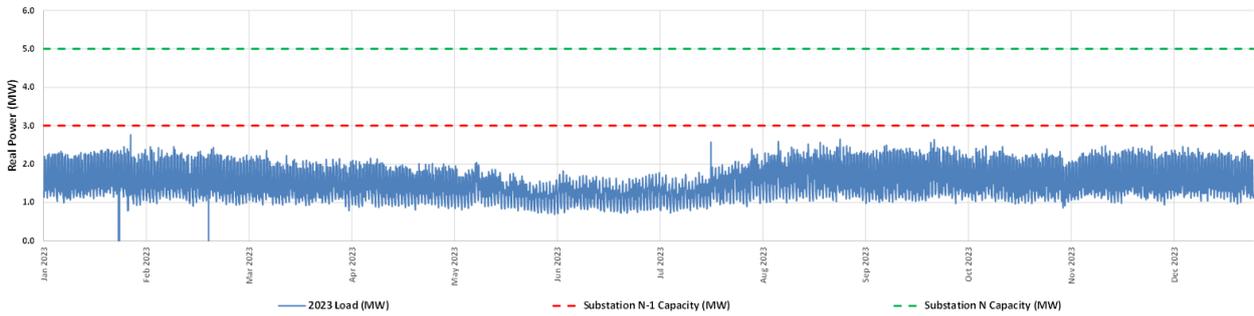


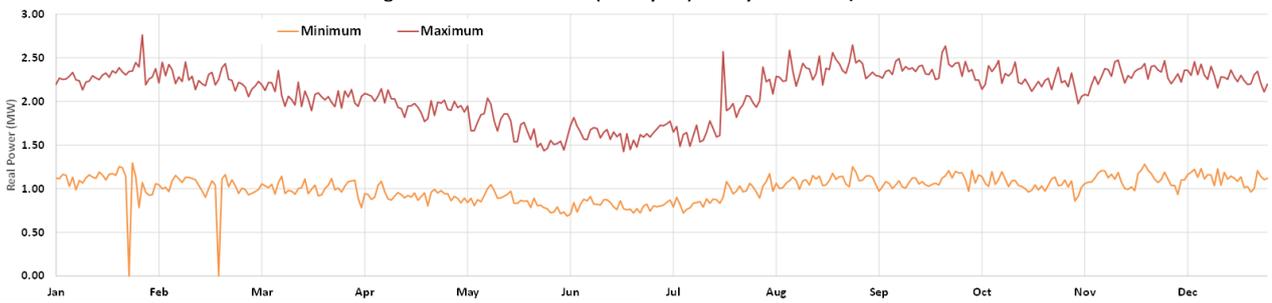
Figure 23. Mokoia 33/11 kV zone substation: Real power (MW) load characteristics.

Livingstone MW

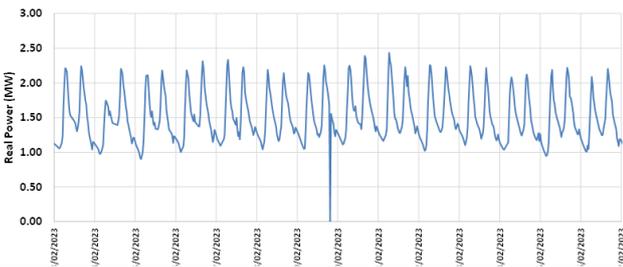
Livingstone Zone Substation (2023 year) - Half hourly loading



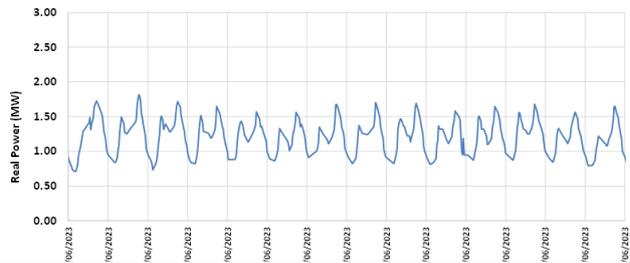
Livingstone Zone Substation (2023 year) - Daily Maximum/Minimum



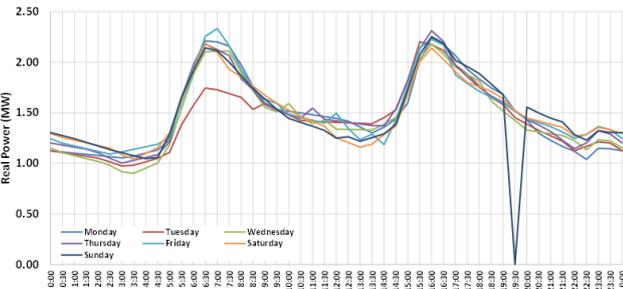
Livingstone Zone Substation (2023 year) - Summer (February)



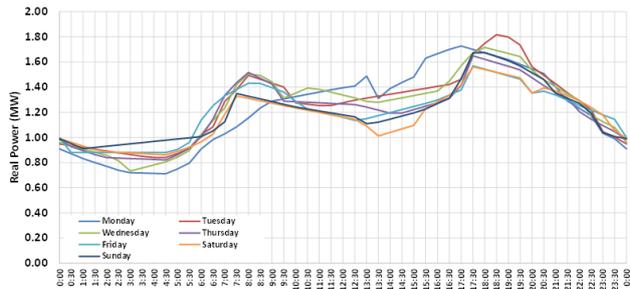
Livingstone Zone Substation (2023 year) - Winter (June)



Livingstone Zone Substation (2023 year) - Summer (February)



Livingstone Zone Substation (2023 year) - Winter (June)



Livingstone Zone Substation (2023 year) - Load Duration Curve

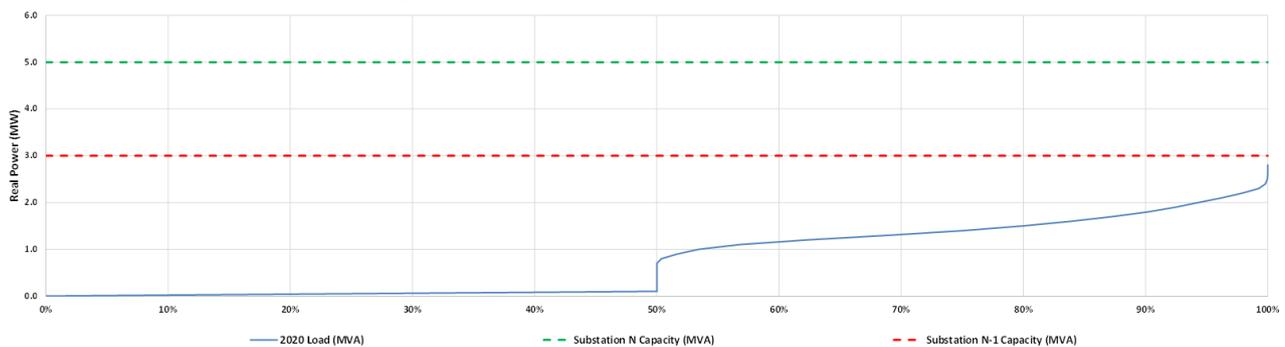
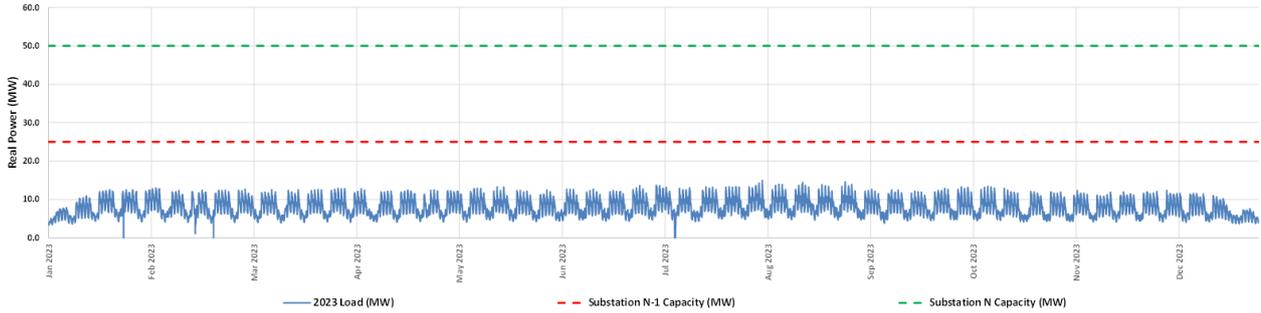


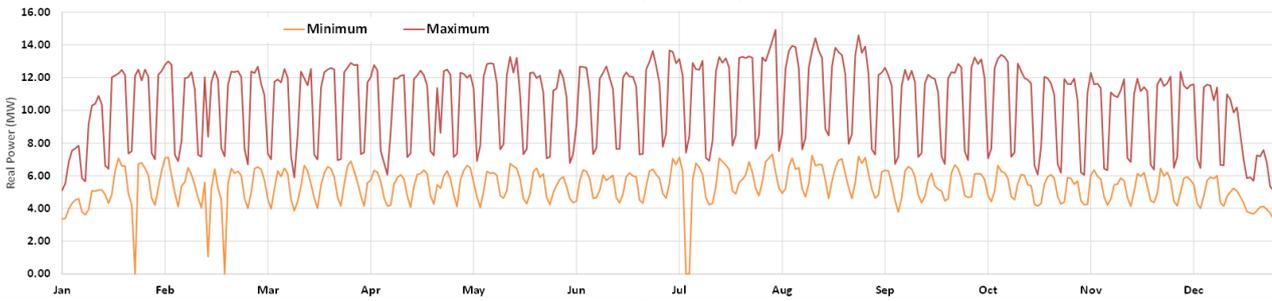
Figure 24. Livingstone 33/11 kV zone substation: Real power (MW) load characteristics.

Bell Block MW

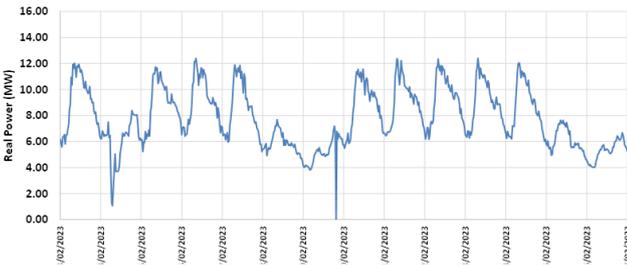
Bell Block Zone Substation (2023 year) - Half hourly loading



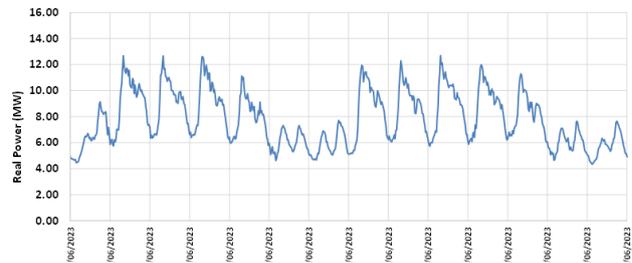
Bell Block Zone Substation (2023 year) - Daily Maximum/Minimum



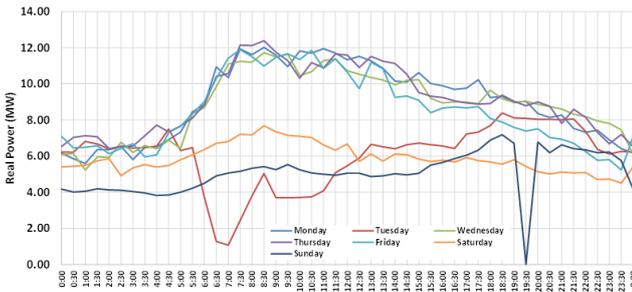
Bell Block Zone Substation (2023 year) - Summer (February)



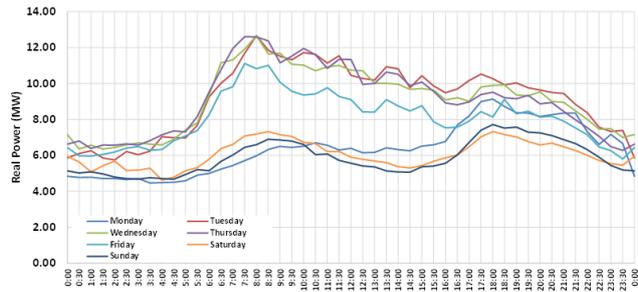
Bell Block Zone Substation (2023 year) - Winter (June)



Bell Block Zone Substation (2023 year) - Summer (February)



Bell Block Zone Substation (2023 year) - Winter (June)



Bell Block Zone Substation (2023 year) - Load Duration Curve

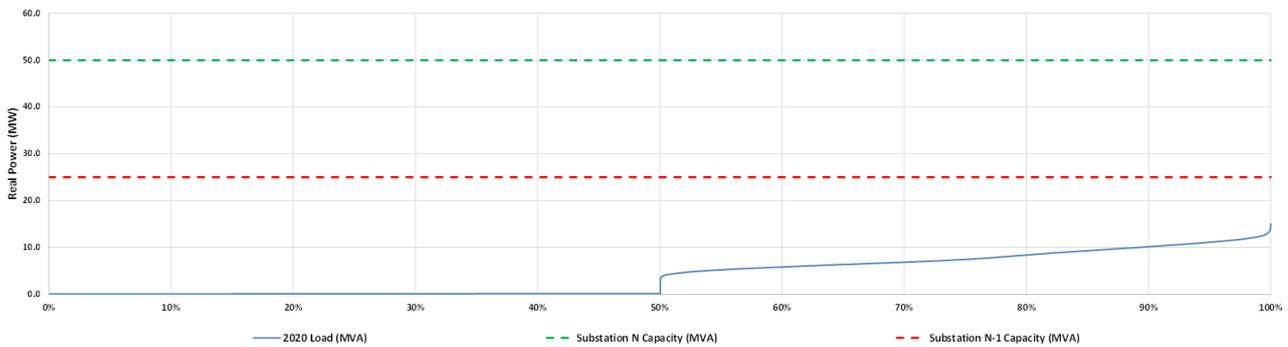
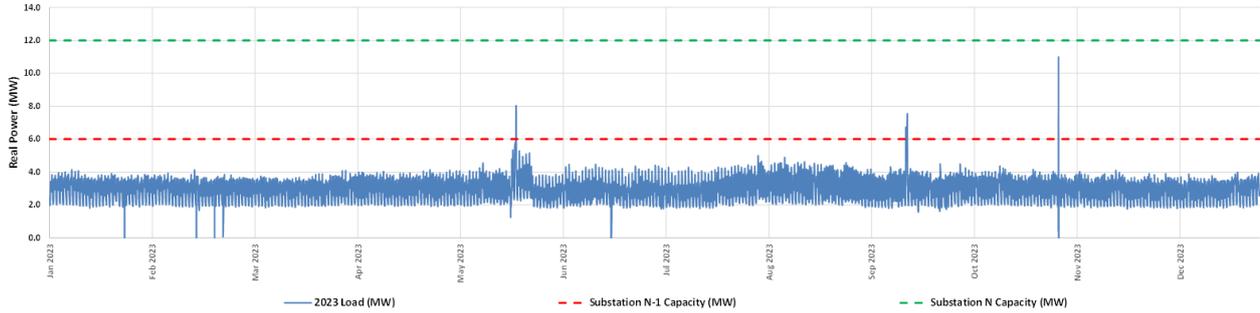


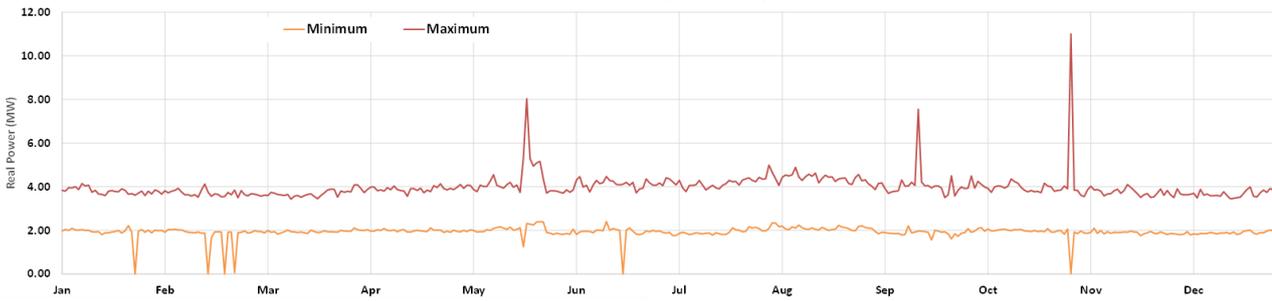
Figure 25. Bell Block 33/11 kV zone substation: Real power (MW) load characteristics.

Waitara East MW

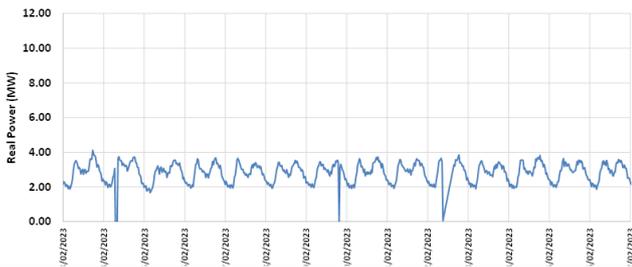
Waitara East Zone Substation (2023 year) - Half hourly loading



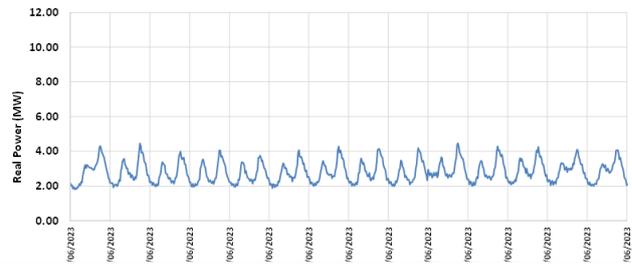
Waitara East Zone Substation (2023 year) - Daily Maximum/Minimum



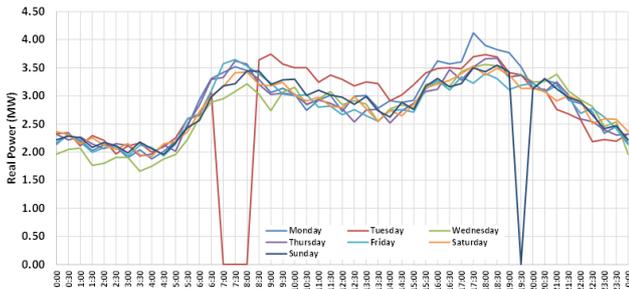
Waitara East Zone Substation (2023 year) - Summer (February)



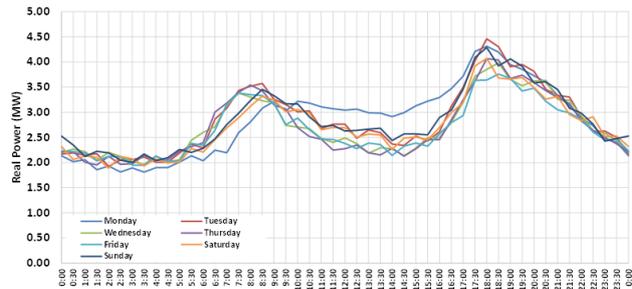
Waitara East Zone Substation (2023 year) - Winter (June)



Waitara East Zone Substation (2023 year) - Summer (February)



Waitara East Zone Substation (2023 year) - Winter (June)



Waitara East Zone Substation (2023 year) - Load Duration Curve

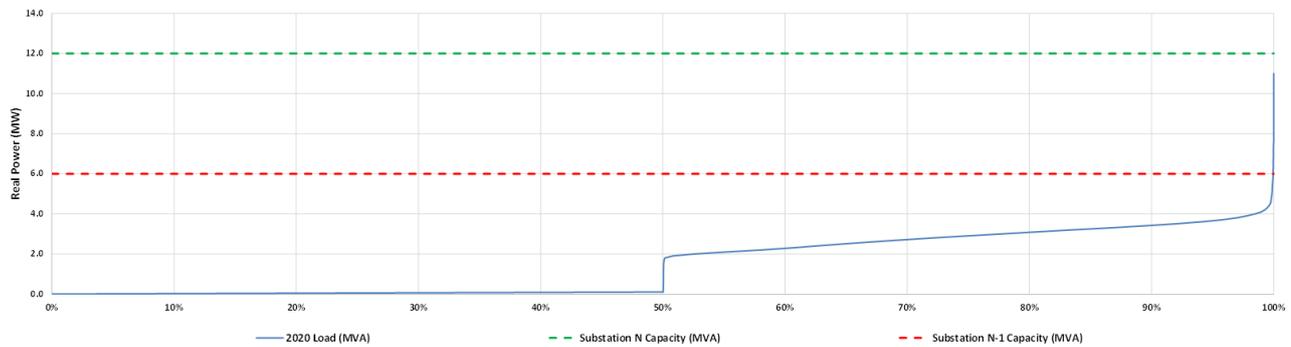
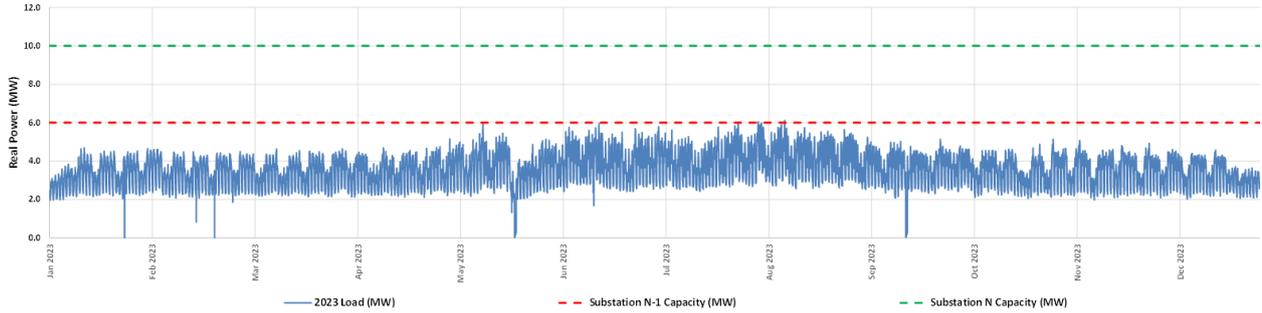


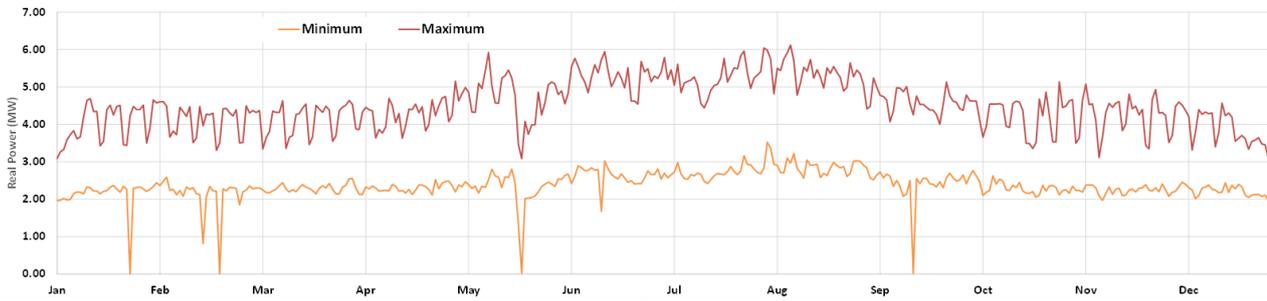
Figure 26. Waitara East 33/11 kV zone substation: Real power (MW) load characteristics.

Waitara West MW

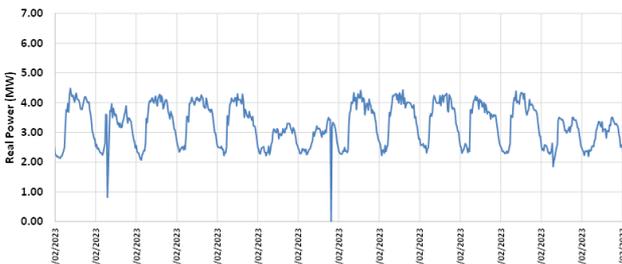
Waitara West Zone Substation (2023 year) - Half hourly loading



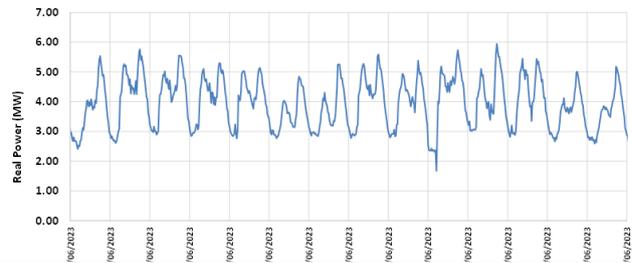
Waitara West Zone Substation (2023 year) - Daily Maximum/Minimum



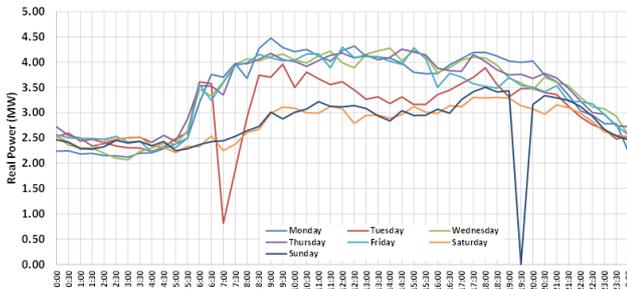
Waitara West Zone Substation (2023 year) - Summer (February)



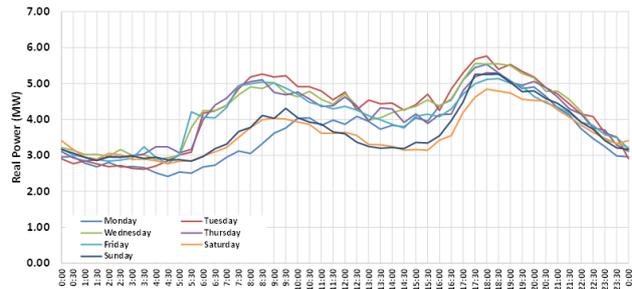
Waitara West Zone Substation (2023 year) - Winter (June)



Waitara West Zone Substation (2023 year) - Summer (February)



Waitara West Zone Substation (2023 year) - Winter (June)



Waitara West Zone Substation (2023 year) - Load Duration Curve

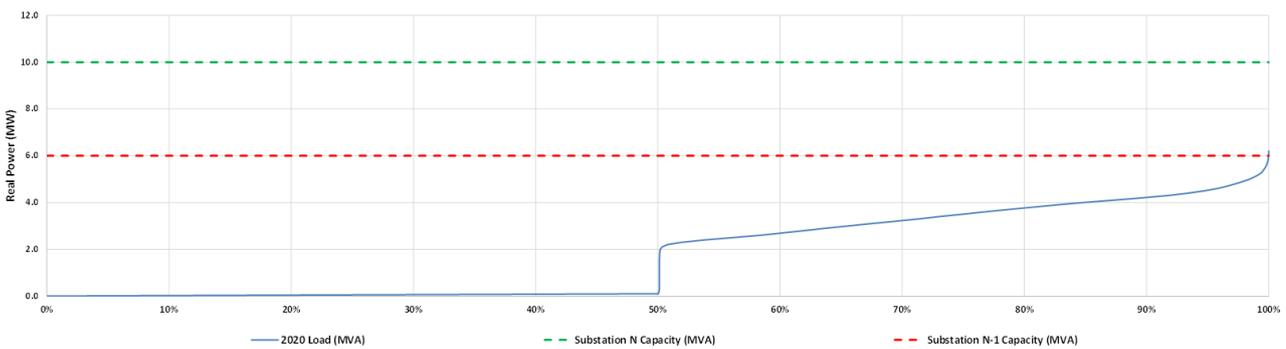
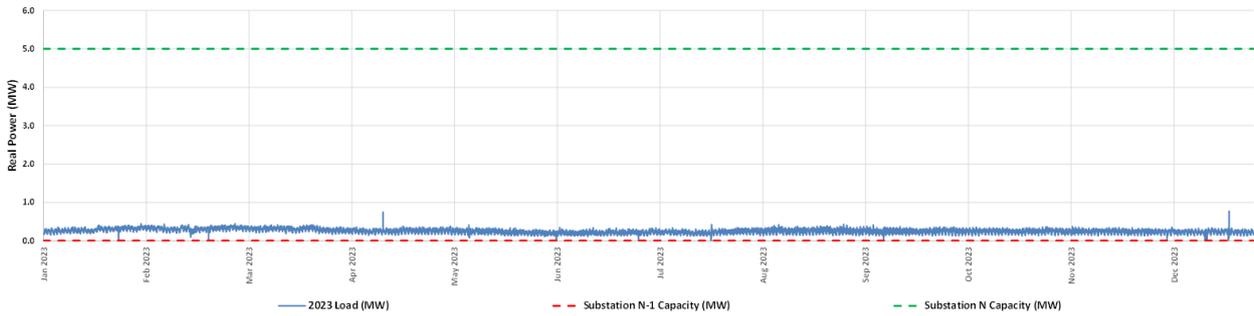


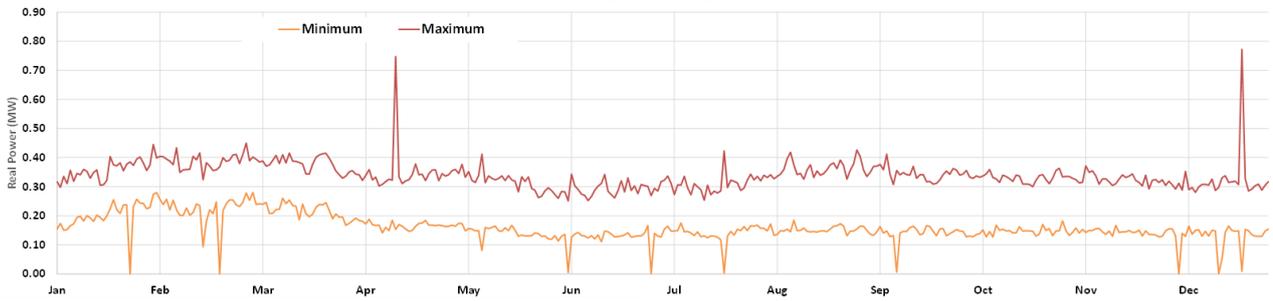
Figure 27. Waitara West 33/11 kV zone substation: Real power (MW) load characteristics.

McKee MW

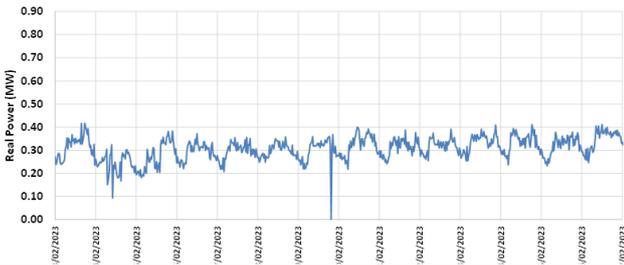
McKee Zone Substation (2023 year) - Half hourly loading



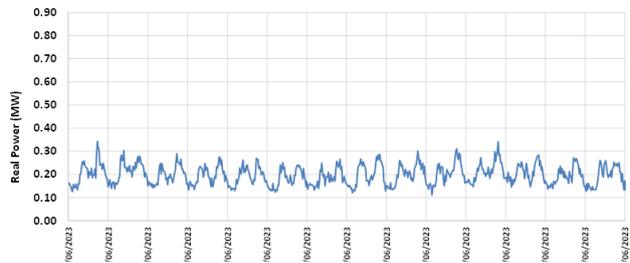
McKee Zone Substation (2023 year) - Daily Maximum/Minimum



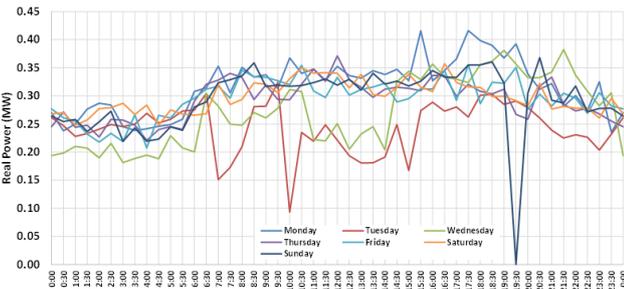
McKee Zone Substation (2023 year) - Summer (February)



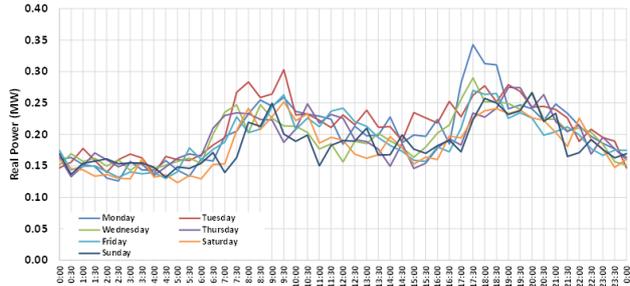
McKee Zone Substation (2023 year) - Winter (June)



McKee Zone Substation (2023 year) - Summer (February)



McKee Zone Substation (2023 year) - Winter (June)



McKee Zone Substation (2023 year) - Load Duration Curve

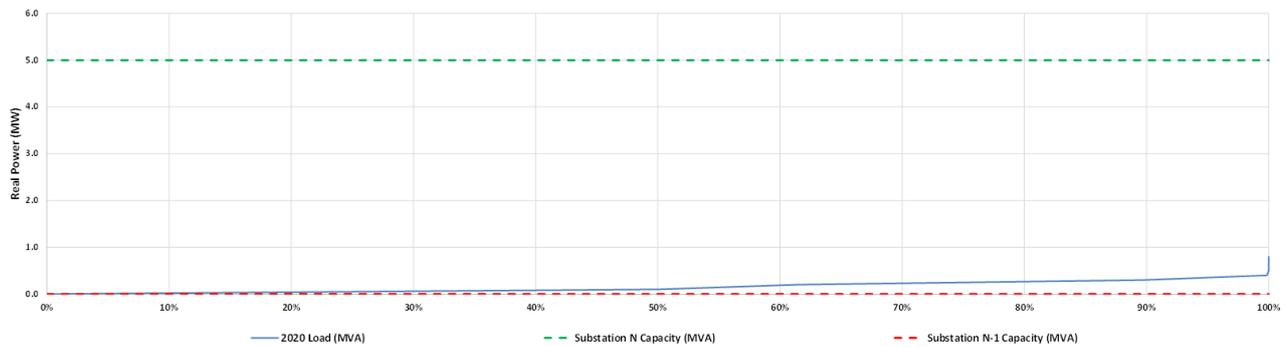
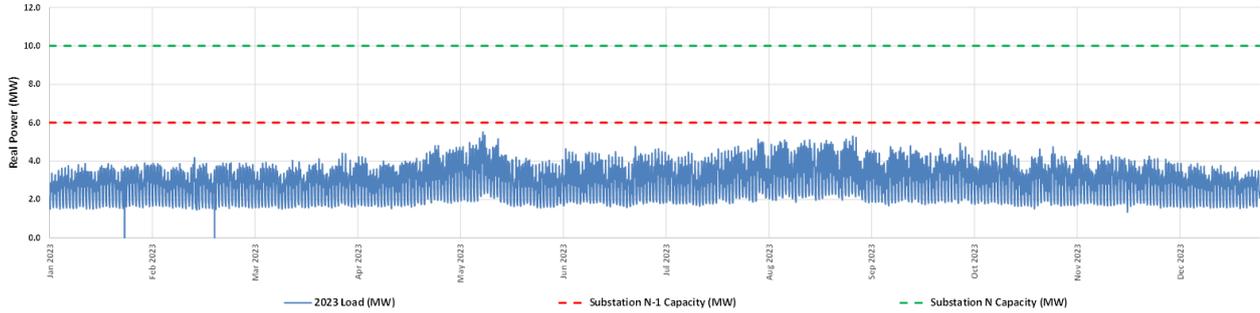


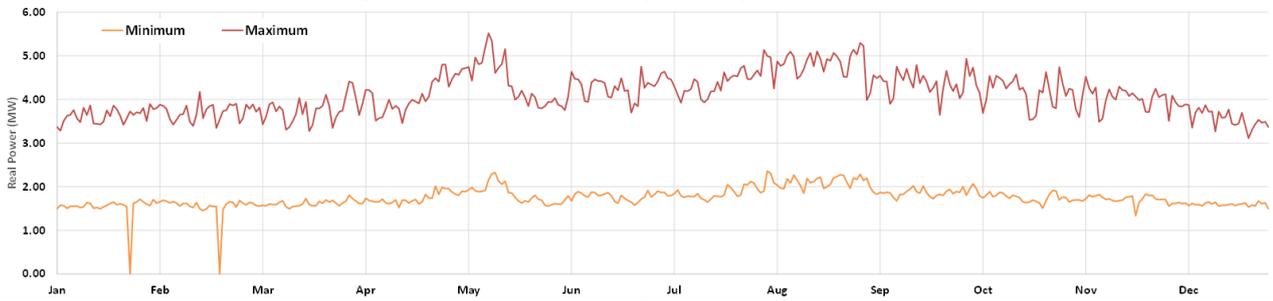
Figure 28. McKee 33/11 kV zone substation: Real power (MW) load characteristics.

Inglewood MW

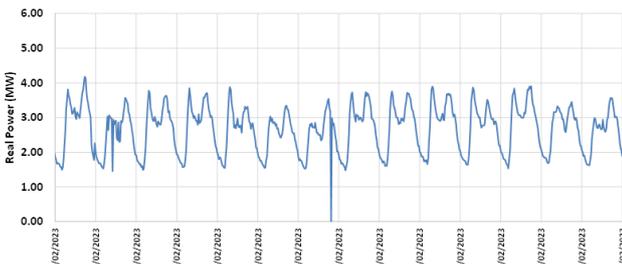
Inglewood Zone Substation (2023 year) - Half hourly loading



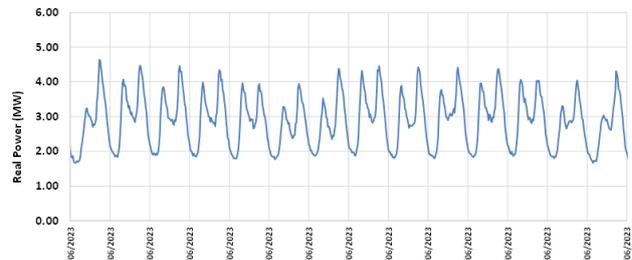
Inglewood Zone Substation (2023 year) - Daily Maximum/Minimum



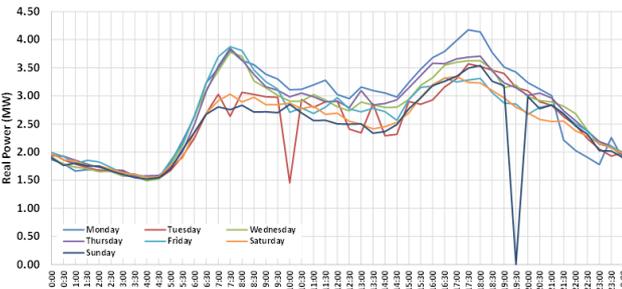
Inglewood Zone Substation (2023 year) - Summer (February)



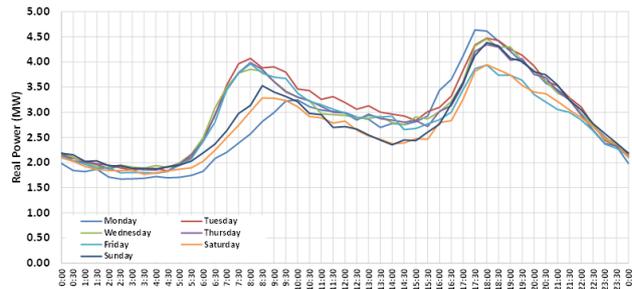
Inglewood Zone Substation (2023 year) - Winter (June)



Inglewood Zone Substation (2023 year) - Summer (February)



Inglewood Zone Substation (2023 year) - Winter (June)



Inglewood Zone Substation (2023 year) - Load Duration Curve

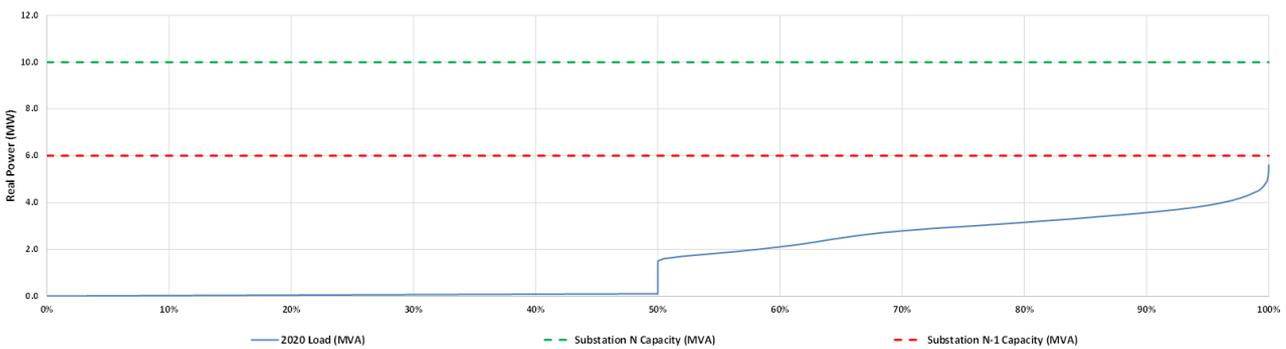
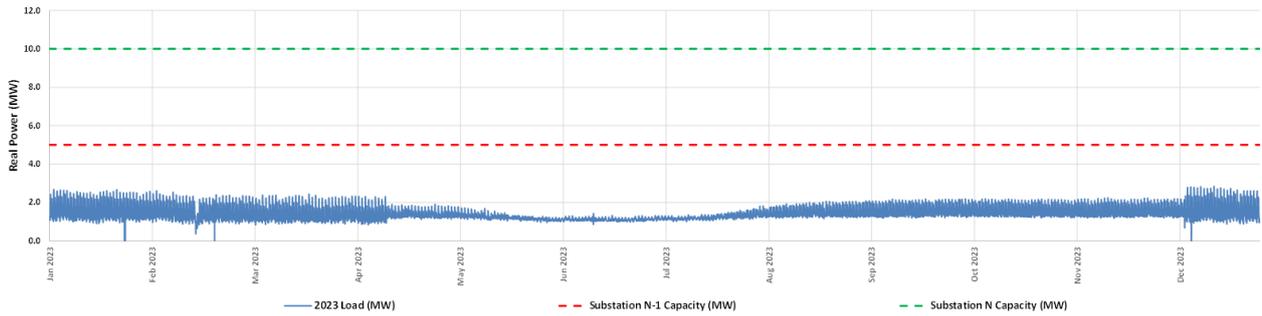


Figure 29. Inglewood 33/11 kV zone substation: Real power (MW) load characteristics.

Pungarehu MW

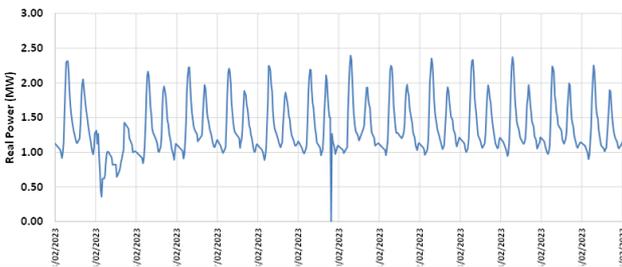
Pungarehu Zone Substation (2023 year) - Half hourly loading



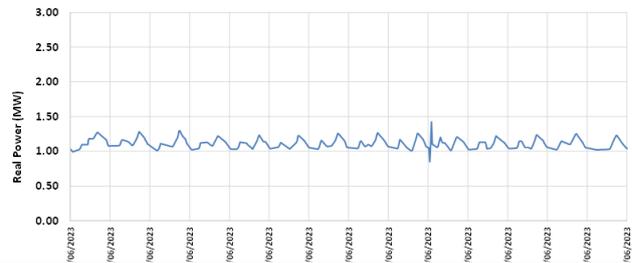
Pungarehu Zone Substation (2023 year) - Daily Maximum/Minimum



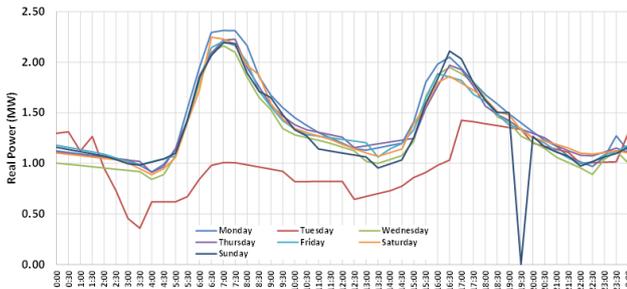
Pungarehu Zone Substation (2023 year) - Summer (February)



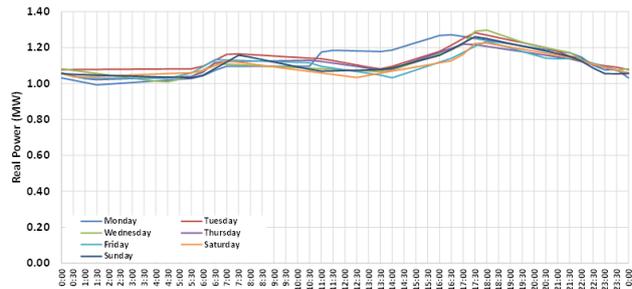
Pungarehu Zone Substation (2023 year) - Winter (June)



Pungarehu Zone Substation (2023 year) - Summer (February)



Pungarehu Zone Substation (2023 year) - Winter (June)



Pungarehu Zone Substation (2023 year) - Load Duration Curve

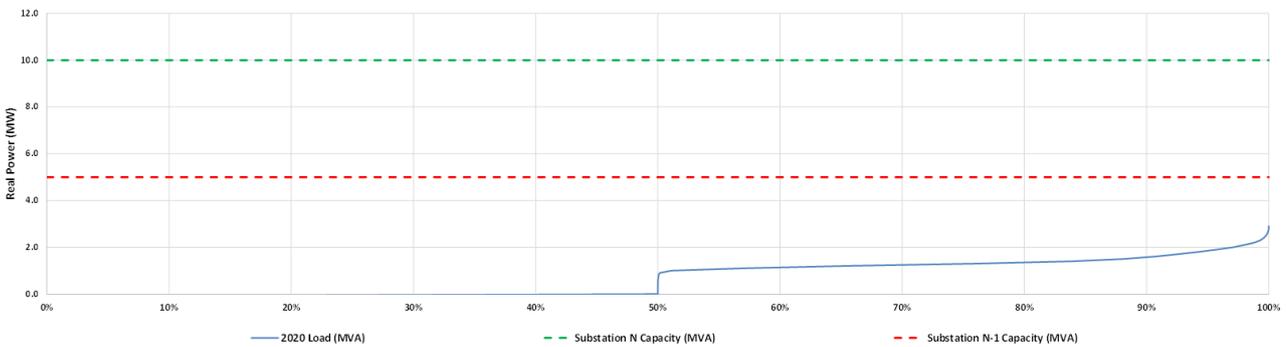
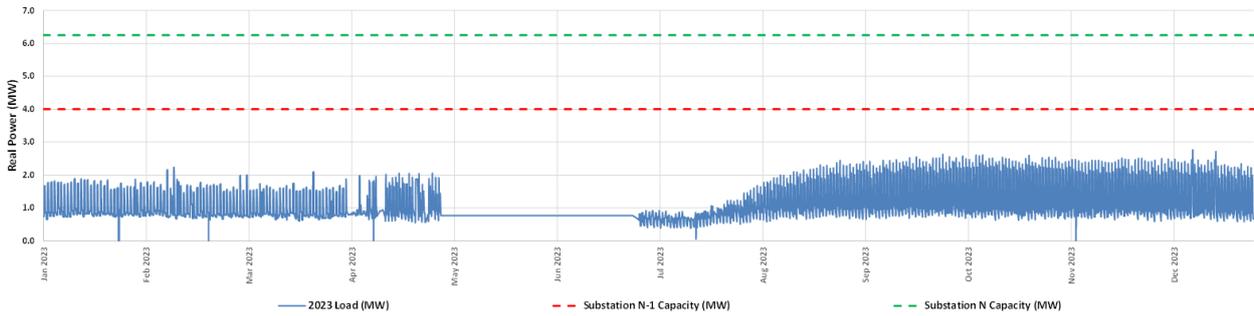


Figure 30. Pungarehu 33/11 kV zone substation: Real power (MW) load characteristics.

Ngāriki MW

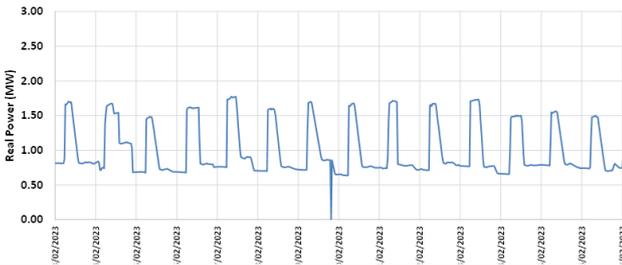
Ngāriki Zone Substation (2023 year) - Half hourly loading



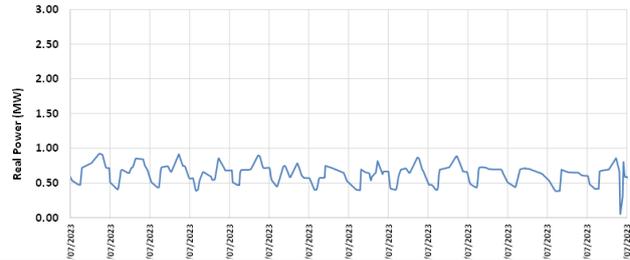
Ngāriki Zone Substation (2023 year) - Daily Maximum/Minimum



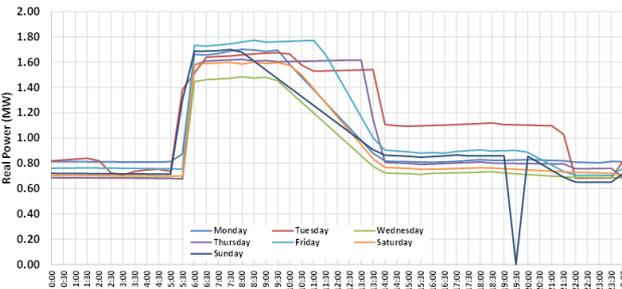
Ngāriki Zone Substation (2023 year) - Summer (February)



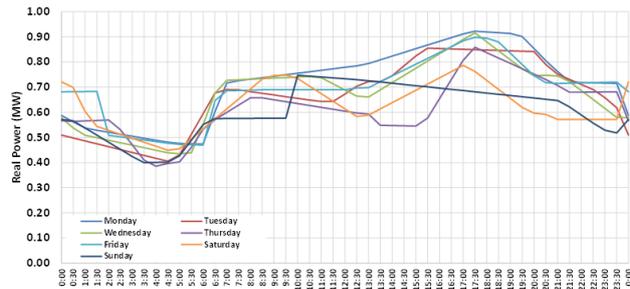
Ngāriki Zone Substation (2023 year) - Winter (July)



Ngāriki Zone Substation (2023 year) - Summer (February)



Ngāriki Zone Substation (2023 year) - Winter (July)



Ngāriki Zone Substation (2023 year) - Load Duration Curve

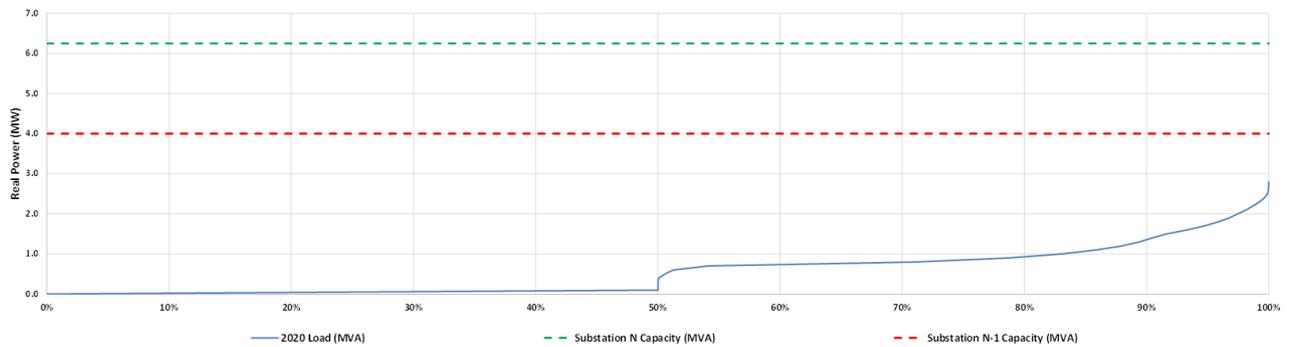
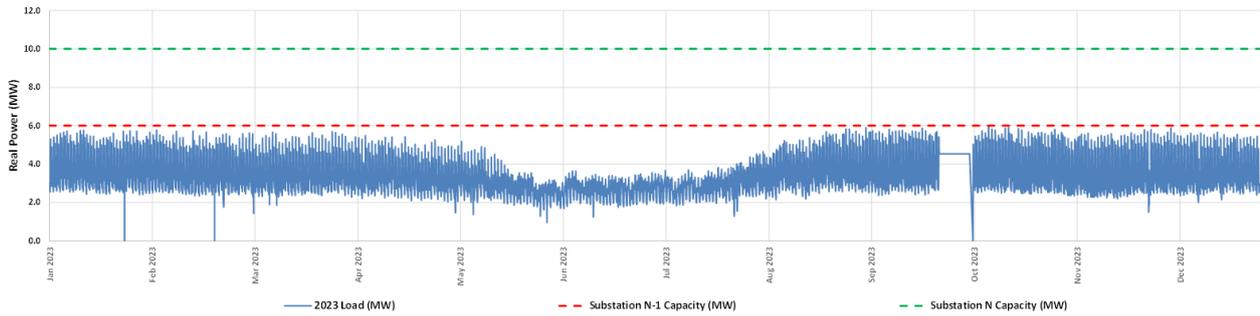


Figure 31. Ngāriki 33/11 kV zone substation: Real power (MW) load characteristics.

Tasman MW

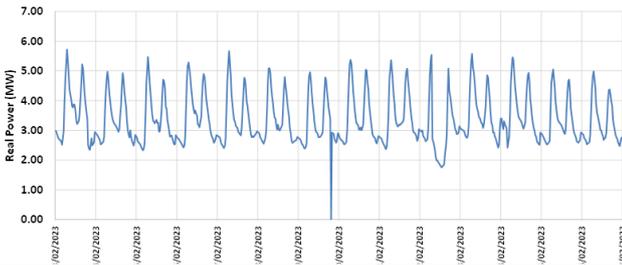
Tasman Zone Substation (2023 year) - Half hourly loading



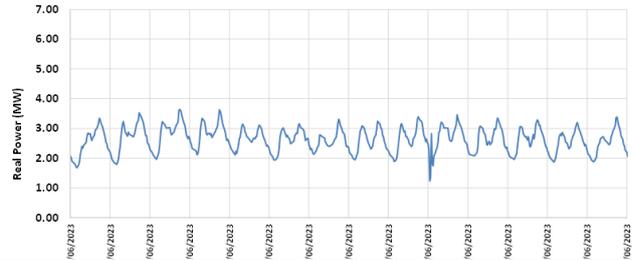
Tasman Zone Substation (2023 year) - Daily Maximum/Minimum



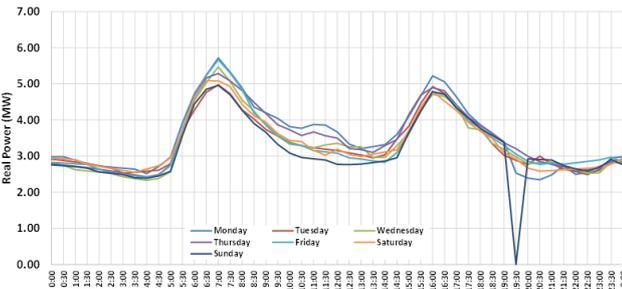
Tasman Zone Substation (2023 year) - Summer (February)



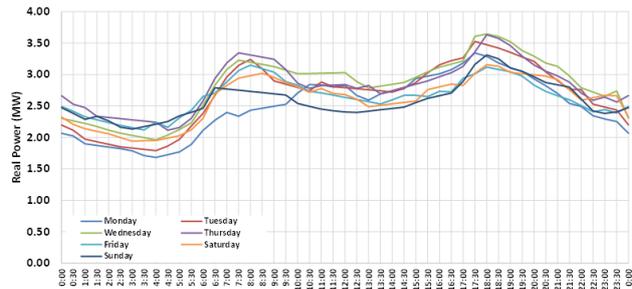
Tasman Zone Substation (2023 year) - Winter (June)



Tasman Zone Substation (2023 year) - Summer (February)



Tasman Zone Substation (2023 year) - Winter (June)



Tasman Zone Substation (2023 year) - Load Duration Curve

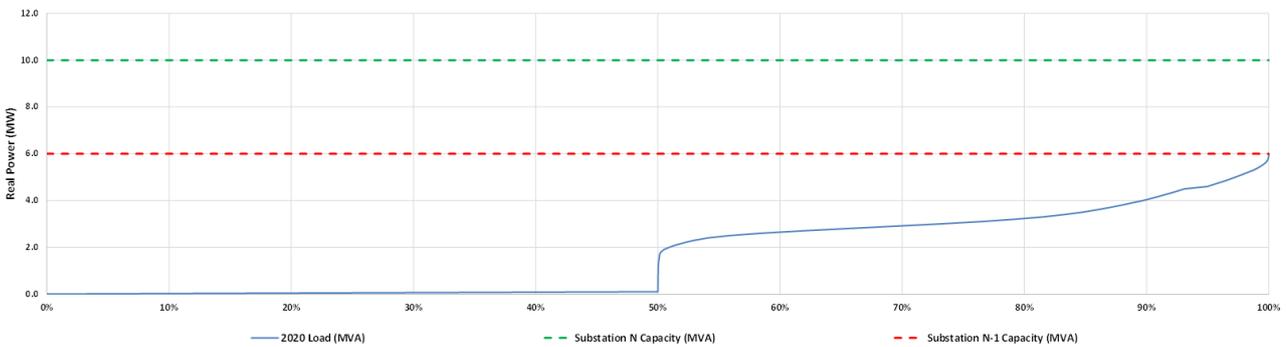
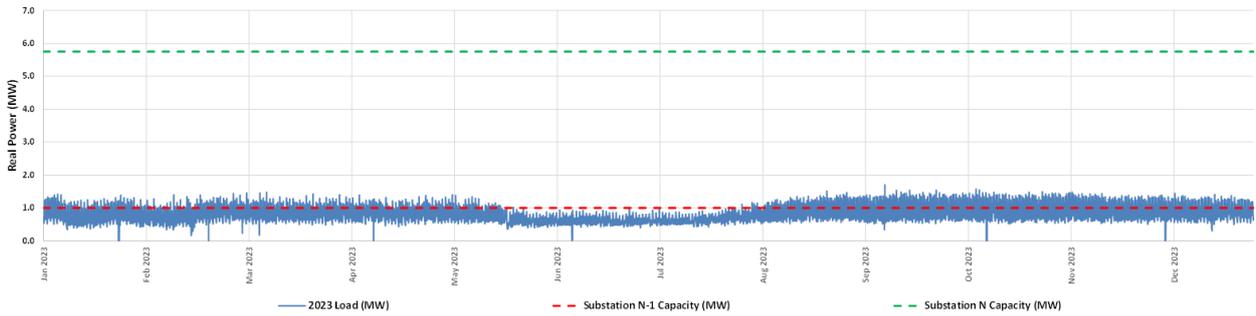


Figure 32. Tasman 33/11 kV zone substation: Real power (MW) load characteristics.

Motukawa MW

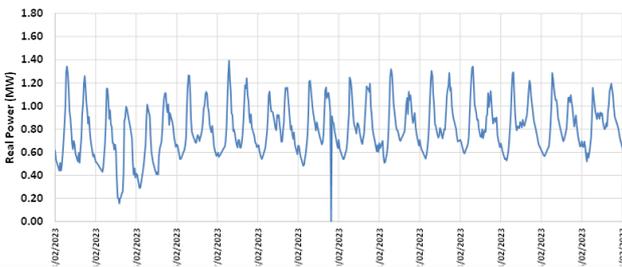
Motukawa Zone Substation (2023 year) - Half hourly loading



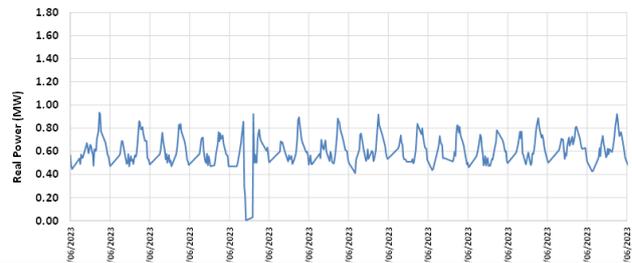
Motukawa Zone Substation (2023 year) - Daily Maximum/Minimum



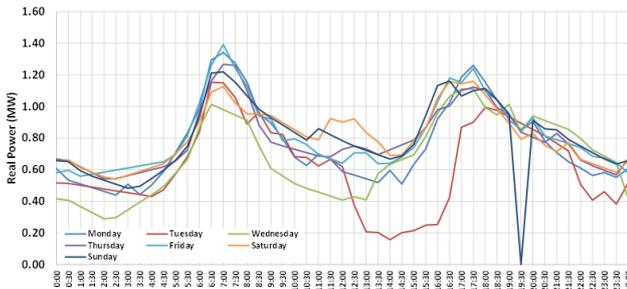
Motukawa Zone Substation (2023 year) - Summer (February)



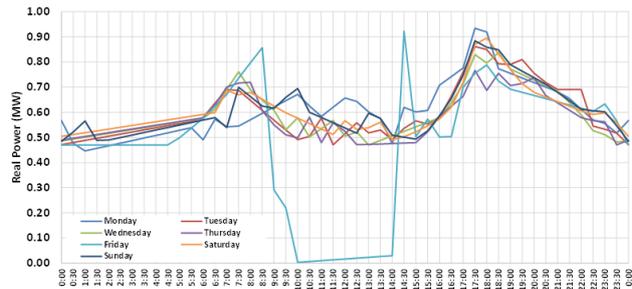
Motukawa Zone Substation (2023 year) - Winter (June)



Motukawa Zone Substation (2023 year) - Summer (February)



Motukawa Zone Substation (2023 year) - Winter (June)



Motukawa Zone Substation (2023 year) - Load Duration Curve

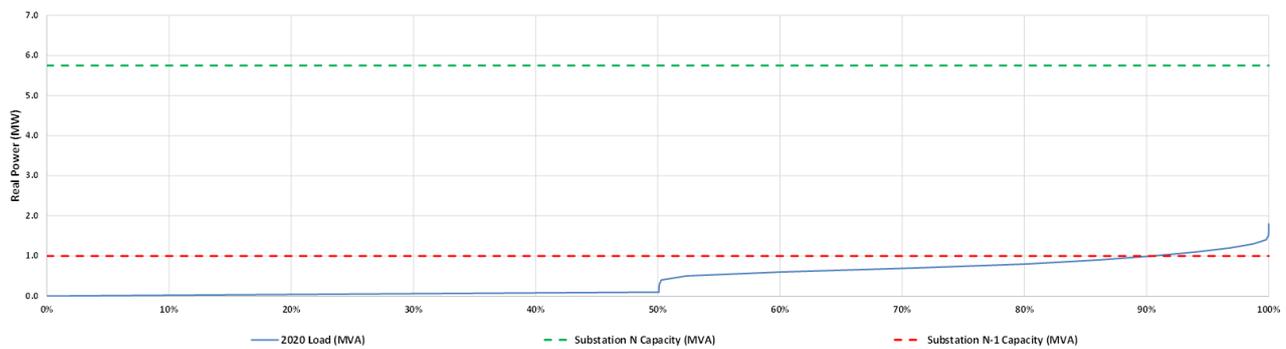
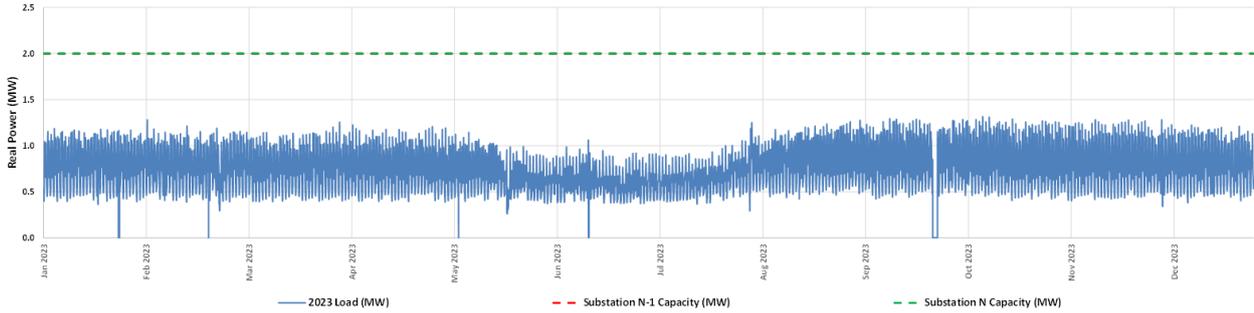


Figure 33. Motukawa 33/6.6 kV zone substation: Real power (MW) load characteristics.

Douglas MW

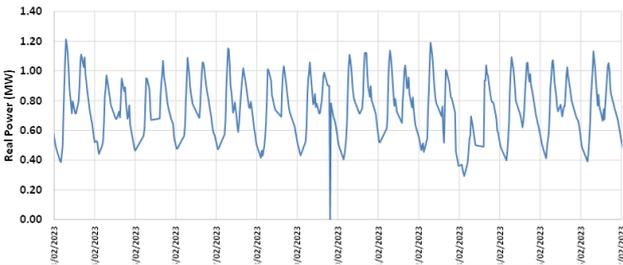
Douglas Zone Substation (2023 year) - Half hourly loading



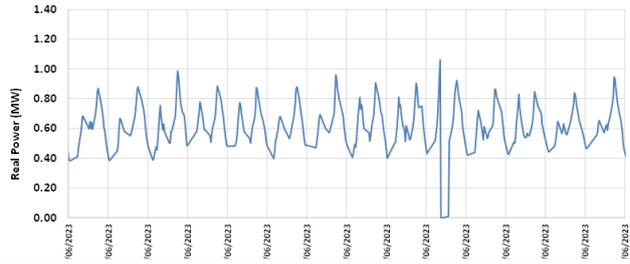
Douglas Zone Substation (2023 year) - Daily Maximum/Minimum



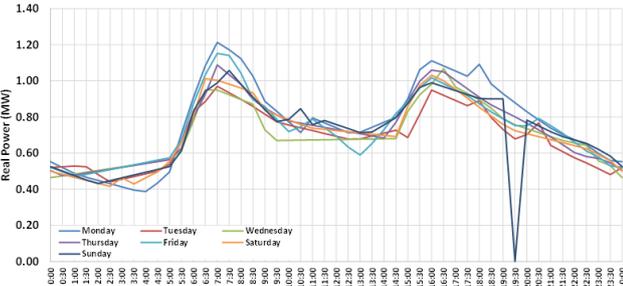
Douglas Zone Substation (2023 year) - Summer (February)



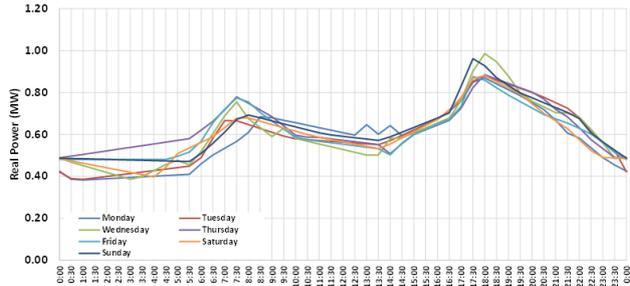
Douglas Zone Substation (2023 year) - Winter (June)



Douglas Zone Substation (2023 year) - Summer (February)



Douglas Zone Substation (2023 year) - Winter (June)



Douglas Zone Substation (2023 year) - Load Duration Curve

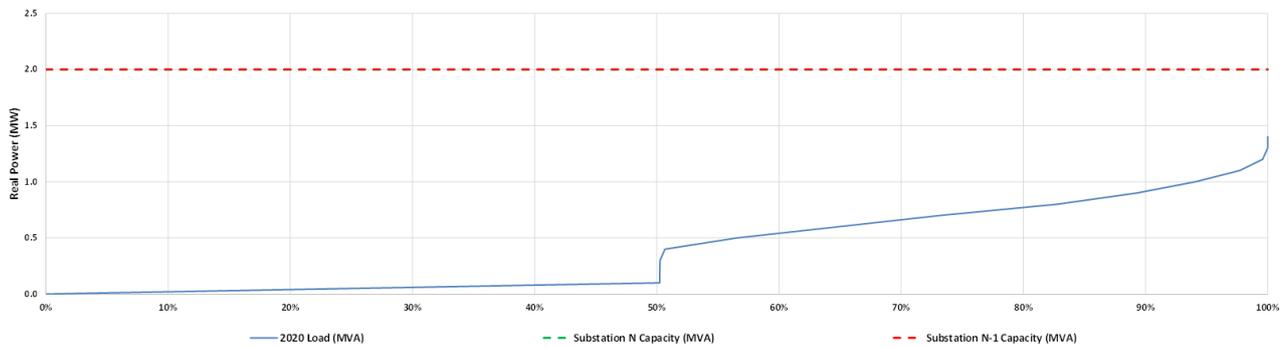
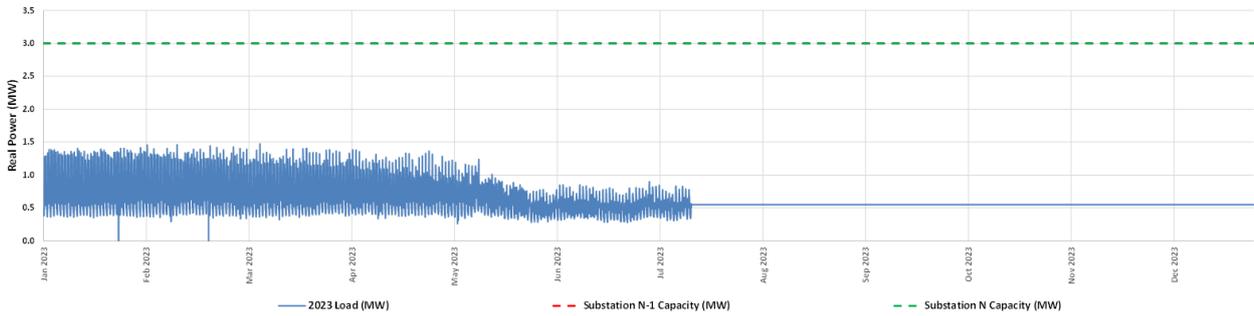


Figure 34. Douglas 33/11 kV zone substation: Real power (MW) load characteristics.

Cardiff MW

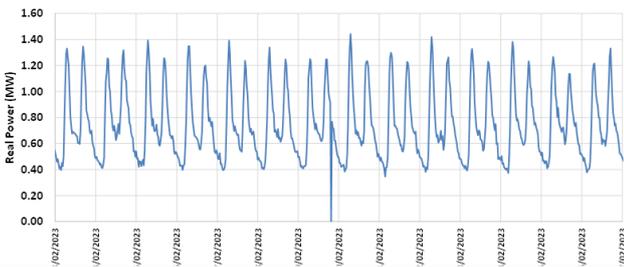
Cardiff Zone Substation (2023 year) - Half hourly loading



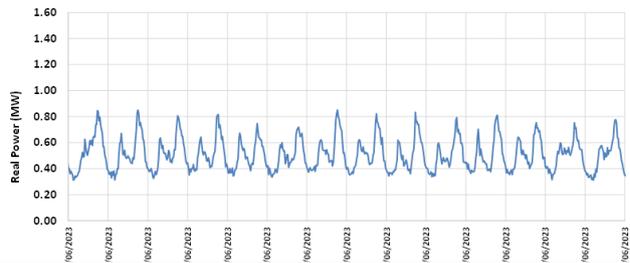
Cardiff Zone Substation (2023 year) - Daily Maximum/Minimum



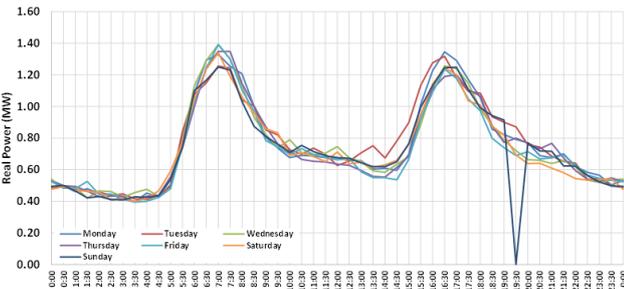
Cardiff Zone Substation (2023 year) - Summer (February)



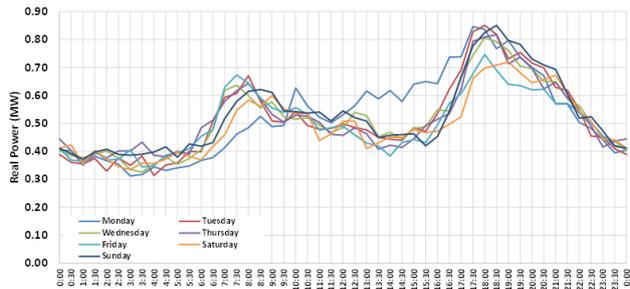
Cardiff Zone Substation (2023 year) - Winter (June)



Cardiff Zone Substation (2023 year) - Summer (February)



Cardiff Zone Substation (2023 year) - Winter (June)



Cardiff Zone Substation (2023 year) - Load Duration Curve

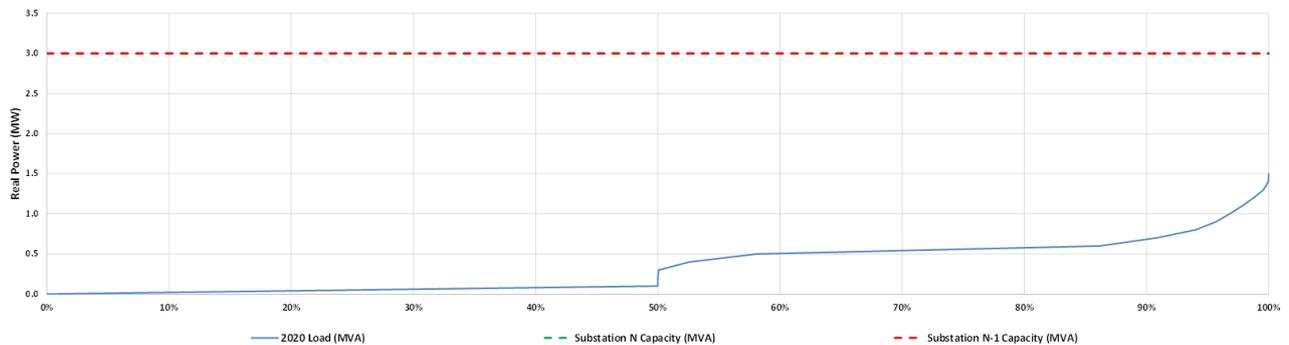
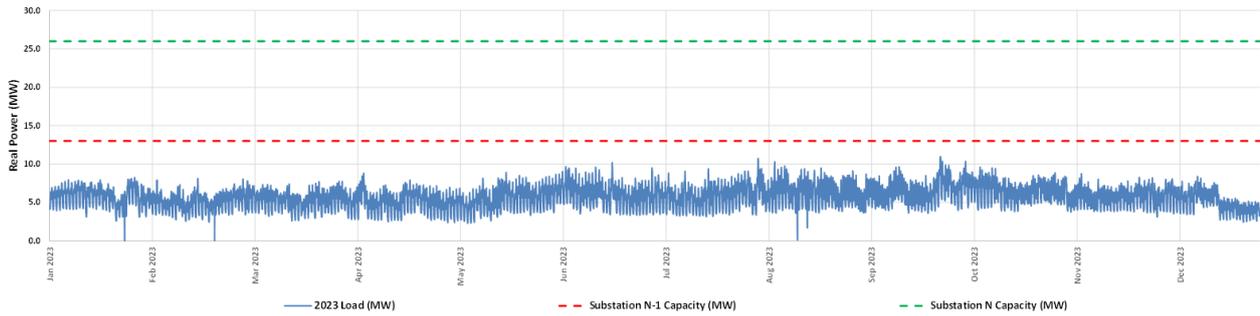


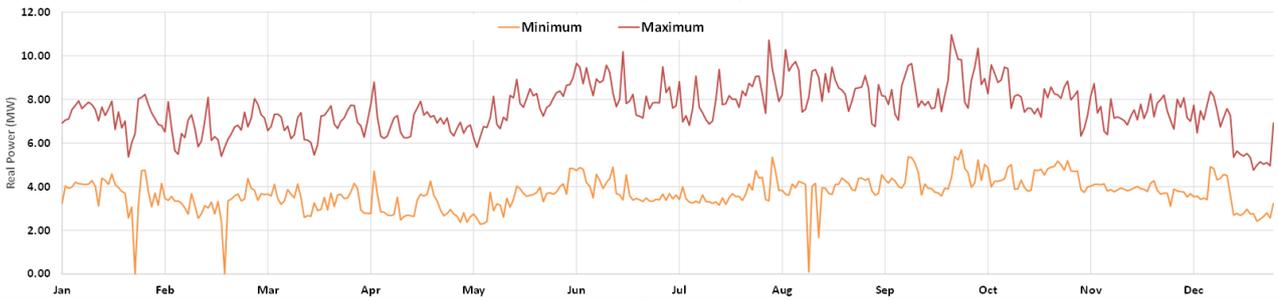
Figure 35. Cardiff 33/11 kV zone substation: Real power (MW) load characteristics.

Cloton Road MW

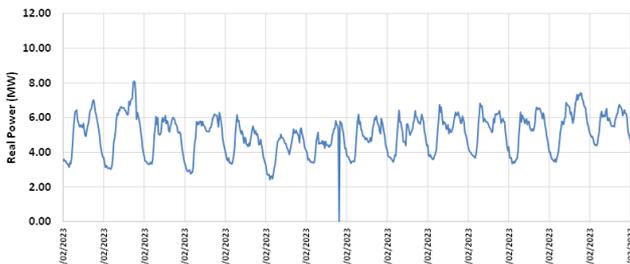
Cloton Rd Zone Substation (2023 year) - Half hourly loading



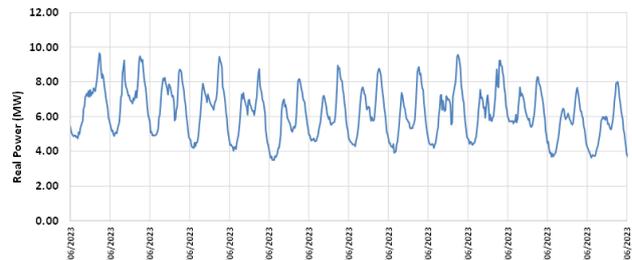
Cloton Rd Zone Substation (2023 year) - Daily Maximum/Minimum



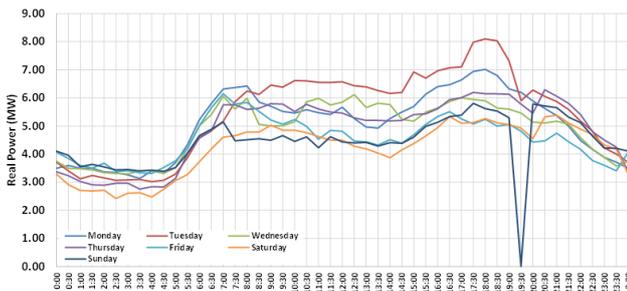
Cloton Rd Zone Substation (2023 year) - Summer (February)



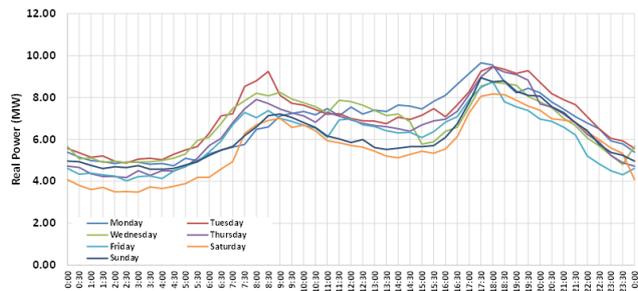
Cloton Rd Zone Substation (2023 year) - Winter (June)



Cloton Rd Zone Substation (2023 year) - Summer (February)



Cloton Rd Zone Substation (2023 year) - Winter (June)



Cloton Rd Zone Substation (2023 year) - Load Duration Curve

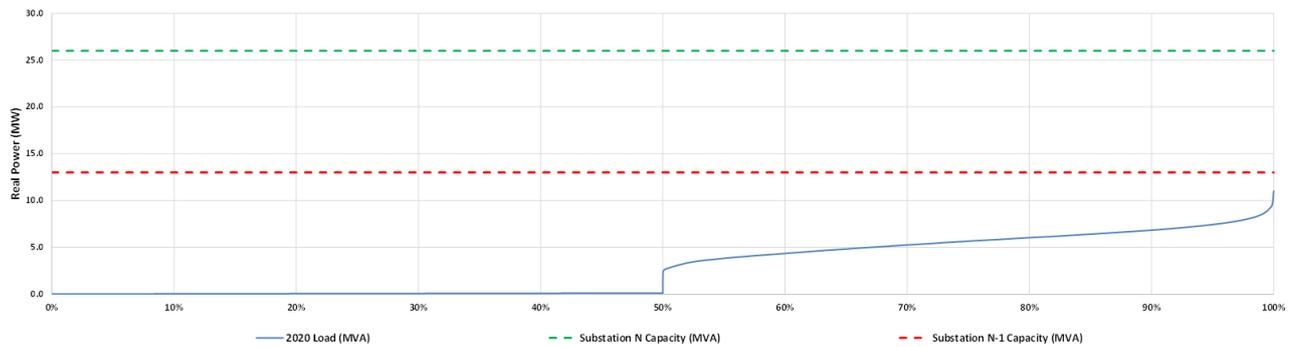
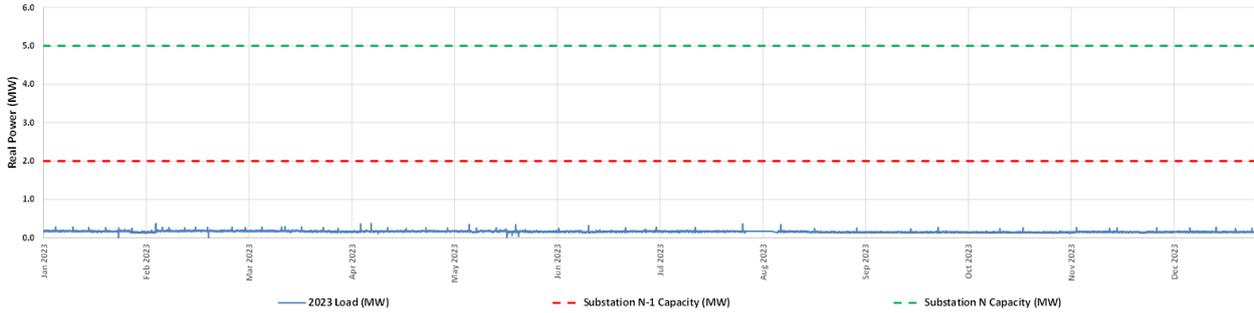


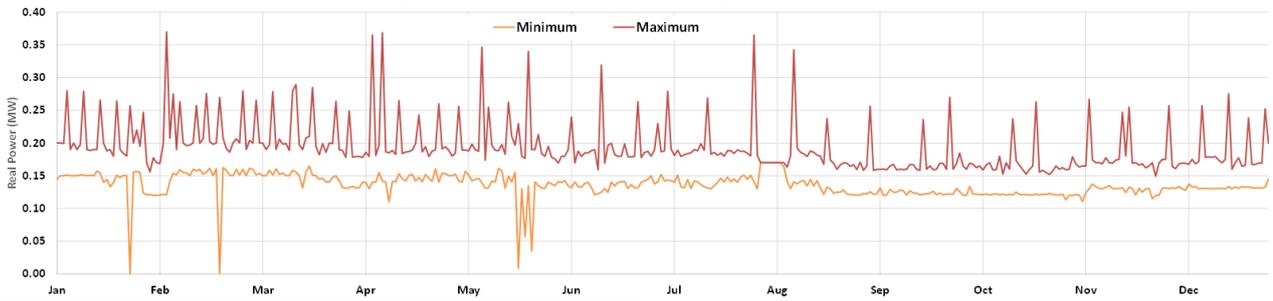
Figure 36. Cloton Road 33/11 kV zone substation: Real power (MW) load characteristics.

Waihapa MW

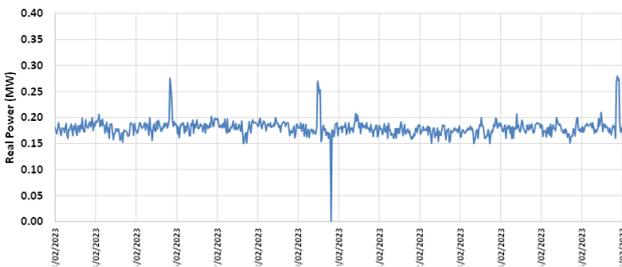
Waihapa Zone Substation (2023 year) - Half hourly loading



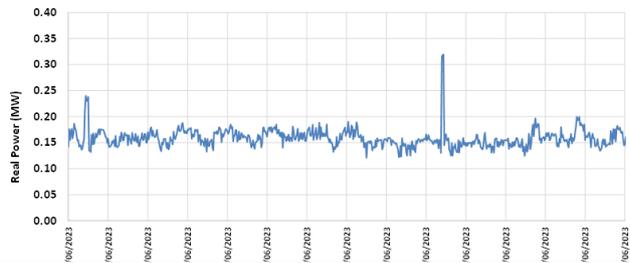
Waihapa Zone Substation (2023 year) - Daily Maximum/Minimum



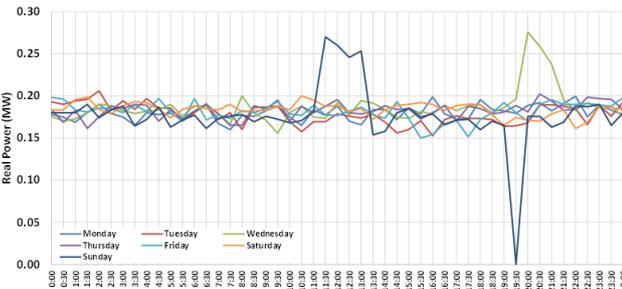
Waihapa Zone Substation (2023 year) - Summer (February)



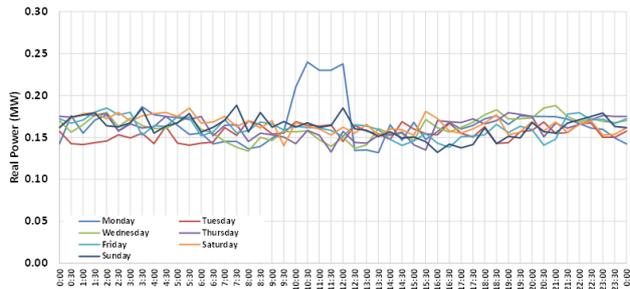
Waihapa Zone Substation (2023 year) - Winter (June)



Waihapa Zone Substation (2023 year) - Summer (February)



Waihapa Zone Substation (2023 year) - Winter (June)



Waihapa Zone Substation (2023 year) - Load Duration Curve

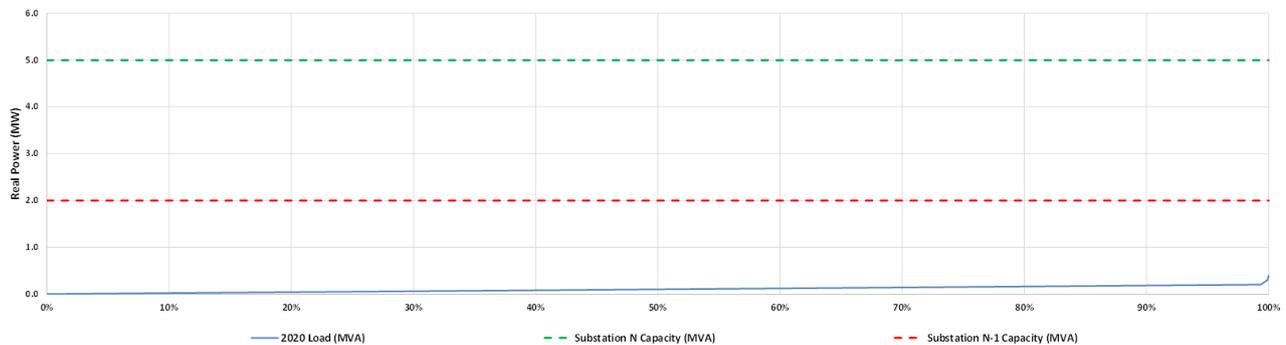
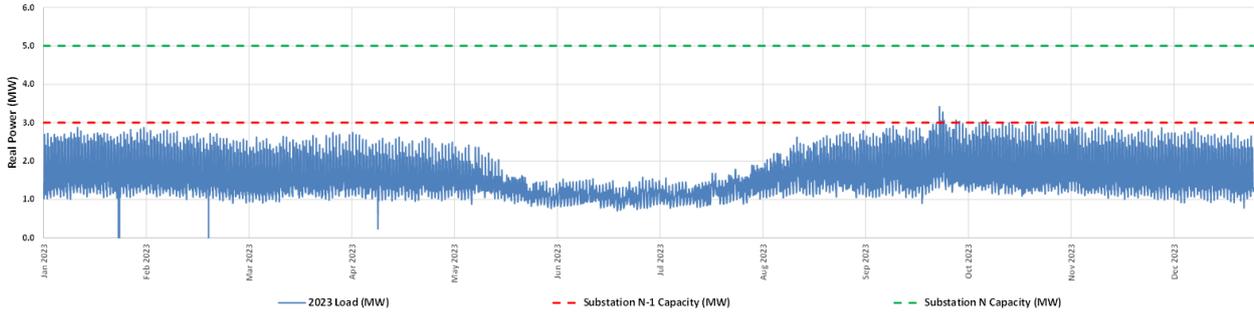


Figure 37. Waihapa 33/11 kV zone substation: Real power (MW) load characteristics.

Kaponga MW

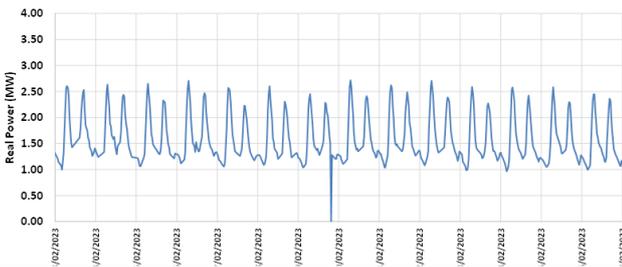
Kaponga Zone Substation (2023 year) - Half hourly loading



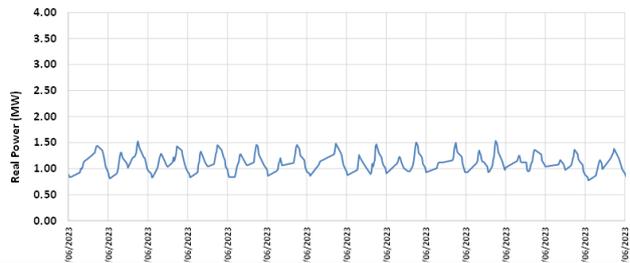
Kaponga Zone Substation (2023 year) - Daily Maximum/Minimum



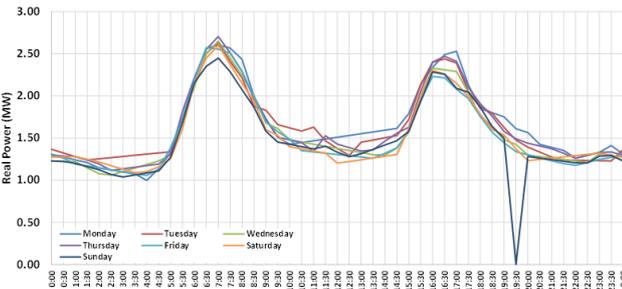
Kaponga Zone Substation (2023 year) - Summer (February)



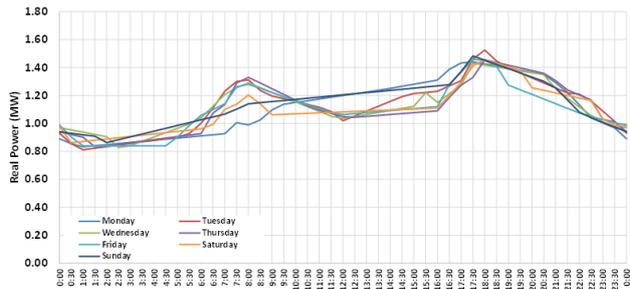
Kaponga Zone Substation (2023 year) - Winter (June)



Kaponga Zone Substation (2023 year) - Summer (February)



Kaponga Zone Substation (2023 year) - Winter (June)



Kaponga Zone Substation (2023 year) - Load Duration Curve

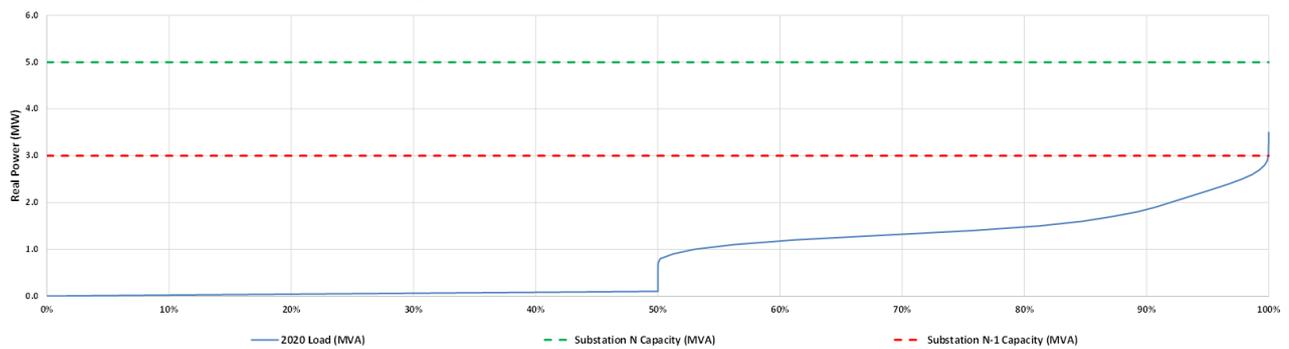
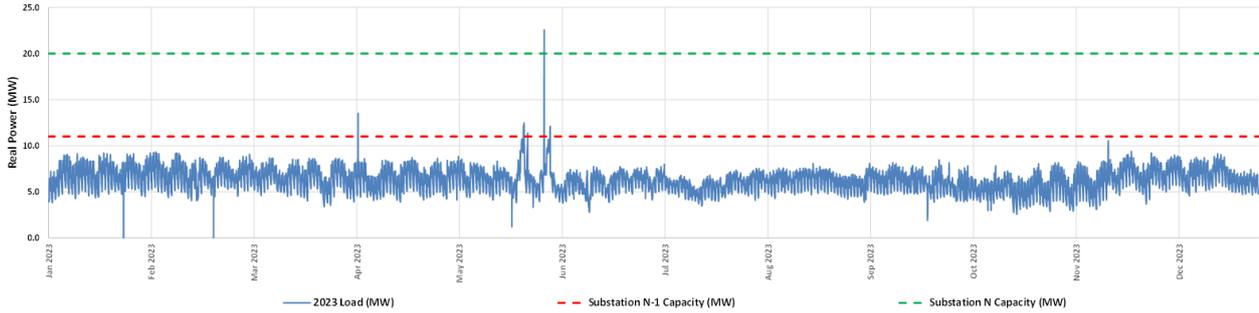


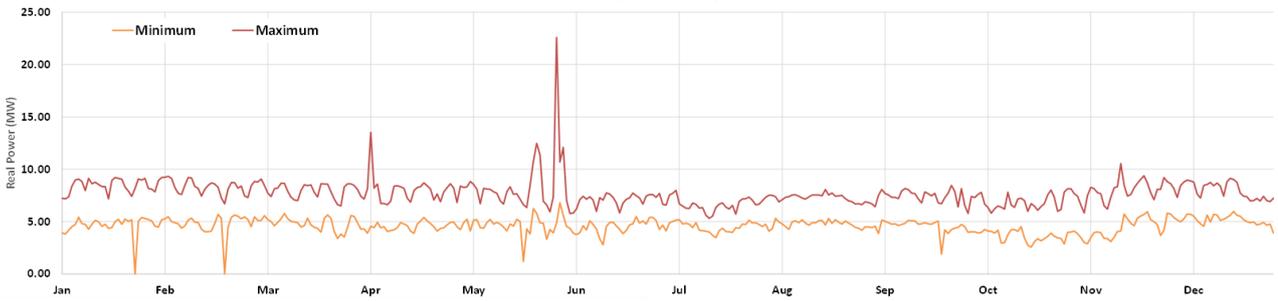
Figure 38. Kaponga 33/11 kV zone substation: Real power (MW) load characteristics.

Eltham MW

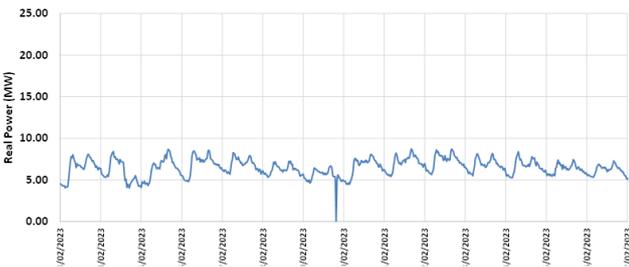
Eltham Zone Substation (2023 year) - Half hourly loading



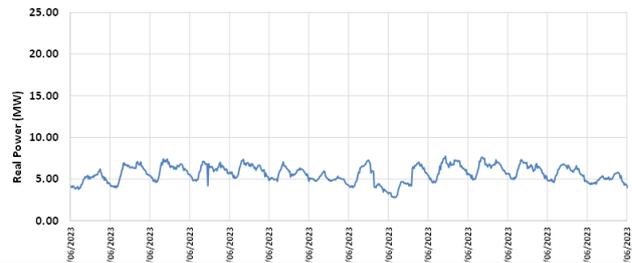
Eltham Zone Substation (2023 year) - Daily Maximum/Minimum



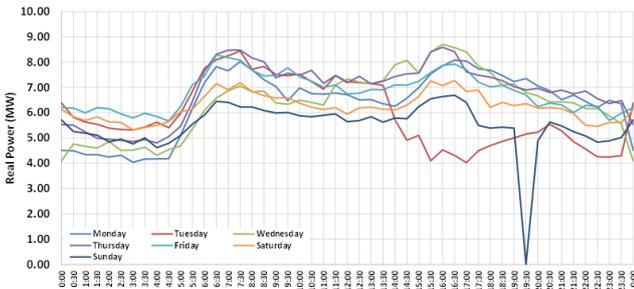
Eltham Zone Substation (2023 year) - Summer (February)



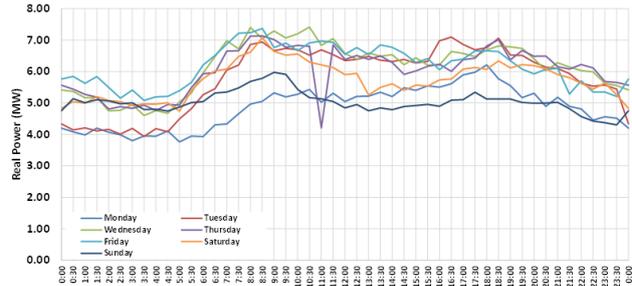
Eltham Zone Substation (2023 year) - Winter (June)



Eltham Zone Substation (2023 year) - Summer (February)



Eltham Zone Substation (2023 year) - Winter (June)



Eltham Zone Substation (2023 year) - Load Duration Curve

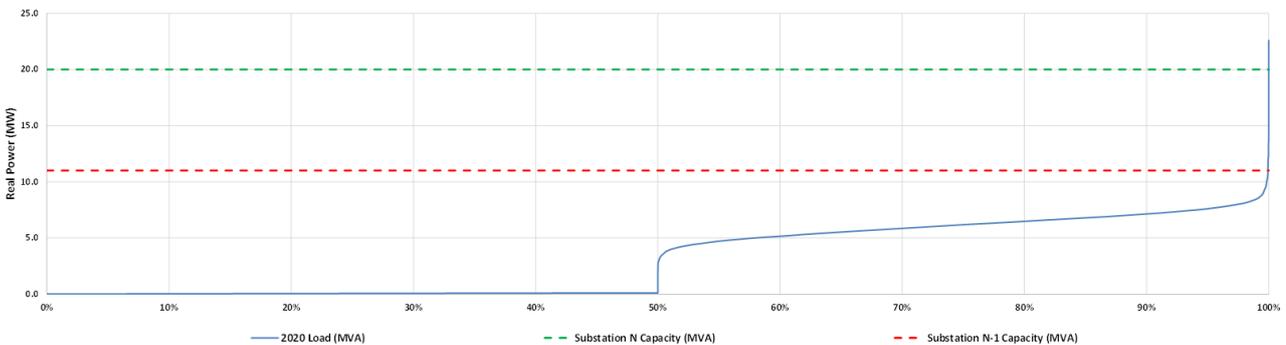


Figure 39. Eltham 33/11 kV zone substation: Real power (MW) load characteristics.