EVOENERGY FINAL PROJECT ASSESSMENT REPORT FOR CANBERRA CBD FEEDERS RIT-D

FINAL PROJECT ASSESSMENT REPORT FOR CANBERRA CENTRAL BUSINESS DISTRICT FEEDER LIMITATIONS UNDER THE REGULATORY INVESTMENT TEST-DISTRIBUTION (RIT-D)

Dispute period commences: 19/05/2025
Dispute period closes: 18/06/2025

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1.0	Draft	N/A
2.0	Final	Rebecca Beasley Planning and Future Networks Manager

DOCUMENT CONTROL

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Note

Printed versions of this document are “uncontrolled copies” - the latest version is available on the Evoenergy Website[1]

[1] https://www.evoenergy.com.au/Your-Energy/Demand-Management/Engagement-opportunities

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EXECUTIVE SUMMARY

Background

This Final Project Assessment Report (FPAR) represents the final stage in the Regulatory Test for Distribution (RIT-D) to address network constraints to the CBD and surrounds. This FPAR has been prepared following the conclusion of the consultation period for the Draft Project Assessment Report (DPAR) that was published on 4 April 2025, for the project originally identified through the Canberra CBD feeder capacity Non-Network Options Report (NNOR) published on 20 December 2024.

The National Electricity Rules (NER) requires a Regulatory Investment Test for Distribution (RIT-D) be completed for augmentation capex projects with a value greater than $7 million. The RIT-D requires a FPAR where Evoenergy wishes to proceed with a RIT-D project following the publication of the DPAR and consultation, having regard to submissions received on the DPAR on matters that set out within the DPAR including the proposed preferred option.

Canberra's Central Business District (CBD), referred to as "Civic", is the central hub of the city and hosts the highest density of business, residential and commercial buildings in the ACT. The city centre is predominately a business centre with large retail and office spaces, and some high-density residential apartment buildings. Civic is currently the origin point of Canberra's light rail system and is the central hub for the city's public transport network.

Electricity is distributed to Civic from the Civic Zone Substation (Civic ZSS) and the City East Zone Substation (City East ZSS). The demand for power has steadily increased in Civic and surrounds in recent years predominately due to new mixed use property developments and increasing density of those developments.

Identified Need

The Canberra CBD is experiencing significant growing electricity demand in the city centre due to the ACT Government's City Precinct Renewal Program. The associated development plan will deliver major residential and commercial building developments over the next ten years. These new large customer connections, plus forecasted underlying demand load growth and uptake of electric vehicles and charging infrastructure, will result in the 11 kV distribution network in Canberra CBD exceeding its thermal capacity in its normal operating state. Evoenergy has identified capacity limitations on fifteen (15) 11 kV distribution feeders into the CBD. The identified need was published in Evoenergy's Annual Planning Report.[2]

Preferred Network Option

The preferred network option has been identified in the NNOR and comprises the construction of five (5) new 11 kV feeders to supply the anticipated additional demand for the Canberra CBD and surrounding area. The scope of these projects includes constructing new 11 kV underground feeders supplied via the 132/11 kV Civic ZSS and City East ZSS. This will involve construction of new conduit banks along identified trench routes, the laying of cable for those feeders and required work within the substations to establish new feeder connections.

The identified network option has a total estimated capital cost of $24.2[3] million exceeding the $7 million threshold under the NER and the investment is therefore subject to a RIT-D.

Summary of DPAR Submissions

Evoenergy received no submissions in response to the DPAR, which identified that no non-network options had been proposed through submissions to the NNOR.

Hence, no non-network options are considered to be credible to meet the identified need.

Recommended Option

The FPAR recommends no change to the preferred option from the DPAR.

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[2] Evoenergy Annual Planning Report 2023: Annual-Planning-Report-2023.pdf

[3] Figures are in 2024/25 AUD

The recommend option is to proceed with the preferred network option to install and commission the additional five new 11kV feeders to supply the CBD, connected via the 132/11kV Civic ZSS and City East ZSS.

The scope of works includes construction of conduit banks, the bulk laying of feeder cables and commissioning switches and modifications required at the ZSS to support the updates. These upgrades will be delivered as a package, with the first part of the package expected to be completed and commissioned prior to summer 2026/27.

Next Steps

Any queries in relation to this RIT-D should be lodged via email to: RIT@evoenergy.com.au

In accordance with the provisions of NER Clause 5.17.5, Registered Participants, Australian Energy Market Operator (AEMO), interested parties, non-network providers and persons registered on Evoenergy's demand side engagement register may, within 30 days after publication of this report, dispute the conclusions made by Evoenergy in this report with the Australian Energy Regulator (AER) based on a manifest error in calculations or application of the RIT-D. Dispute notifications should be sent via email to: RIT@evoenergy.com.au by 18 June 2025 at 5pm. If no formal dispute is raised, Evoenergy will proceed with the preferred option (network option).

An overview of the timeline, from the publication of this FPAR to when the preferred option is required to be operational, is provided in **Table 1**.

TABLE 1: TIMELINE

ACTIVITIES	DATES	STATUS
Publish NNOR and request for submissions	20 Dec 2024	Completed
Consultation period for non-network providers to provide submissions	20 Dec 2024 to 20 Mar 2025	Completed
Public briefing session during consultation period	13 Feb 2025	Completed
Evoenergy review of submissions received (non-network proposals)	Mar 2025	Completed
Publish Draft Project Assessment Report (DPAR)	04 Apr 2025	Completed
Consultation period for DPAR	04 Apr 2025 to 16 May 2025	Completed
Publish Final Project Assessment Report (FPAR)	19 May 2025	Completed
Preferred option operational	Nov 2026	Planned

1. INTRODUCTION

1.1 Scope and Purpose

Under the Regulatory Investment Test for Distribution (RIT-D) process, Evoenergy is required to consider all credible network and non-network options to meet future electricity demand. The RIT-D process involves the following key stages:

Stage 1: Screen for non-network options and publish a NNOR

Stage 2: Undertake consultation on non-network options

Stage 3: Assessment of credible options

Stage 4: Publish draft project assessment and undertake consultation on the preferred option

Stage 5: Publish the final project assessment report (this report).

This report is the fifth and final stage of the RIT-D process to address the identified need for this study area. This report outlines the need for the proposed investment, the description of submissions received to the NNOR, and assessment of non-network options to resolve the identified need and results, and the recommendation on the preferred option to progress. This report identifies that no submissions were received on the DPAR (and therefore that no material changes from the DPAR are proposed).

The FPAR further ensures that stakeholders are informed of the preferred option to proceed with Network augmentation. Evoenergy has developed this FPAR in accordance with the requirements of Clause 5.17.4 of the National Electricity Rules (NER).

As the consultation on the preferred option outlined in the DPAR concluded on 16th May 2025, this FPAR has been prepared to inform all stakeholders on the recommended option for the provision of services to address the identified need.

1.2 Evoenergy's Obligations

Under Clause 5.17.4 of the NER, Evoenergy has obligations relating to this FPAR, including:

- Ensure that the FPAR gives regard to any submissions received on the DPAR[4].
- Ensure that the FPAR is published as soon as practicable after the end of the consultation period on the DPAR.
- Ensure the FPAR contains matters as detailed in the DPAR
- Ensure the FPAR contains a summary of submissions received on the DPAR[5].
- Notify persons registered on its industry demand side engagement register of the report's publication[6].

1.3 Structure of Report

The rest of this FPAR is structured into the following sections:

Section 2: Provides background information on the network location and the associated infrastructure.
Section 3: Describes the identified need that is to be addressed, and applicable service standards.
Section 4: Provides the analysis of the credible options reviewed as part of this RIT-D.
Section 5: Summarises the planning methodology and assumptions used in Evoenergy's assessment.
Section 6: Details recommendations on the preferred option.
Section 7: Summarises submissions to the DPAR and provides guidance on next steps.

[4] As per NER clause 5.17.4(o)
[5] As per NER clause 5.17.4(r)(1)(ii)
[6] As per NER clause 5.17.4(q)

2. BACKGROUND

2.1 Existing Network

2.1.1 Geographic Overview

The Canberra Central Business District (CBD), also known as Civic, contains a mix of high-density commercial and office space, as well as residential apartment buildings. The CBD is also the origin point of the Canberra light rail system and the central hub of Canberra's bus network. The CBD incorporates the City as well as parts of Acton, Turner, Braddon, Reid and Parkes.

Electricity is distributed to the CBD from two 132/11 kV Zone Substations:

- Civic Zone Substation located next to Black Mountain
- City East Zone Substation located next to Mount Ainslie

The zone substations supply an extensive 11 kV network throughout the CBD and surrounds which is predominantly via underground conduits that supplies Low Voltage (LV) high density commercial and residential loads. Fifteen (15) 11 kV CBD feeders are forecast to exceed capacity ratings over the coming years. There is some rooftop photovoltaic (PV) connected in the CBD area, but due to the high-density nature of the area, the generation typically is 100% self-consumed within the buildings they are installed on.

A geographic diagram marking the location of the two zone substations and the existing 11 kV network is provided in as shown in **Figure 1**. This map is publicly accessible from Evoenergy's Rosetta Data Portal.[7]

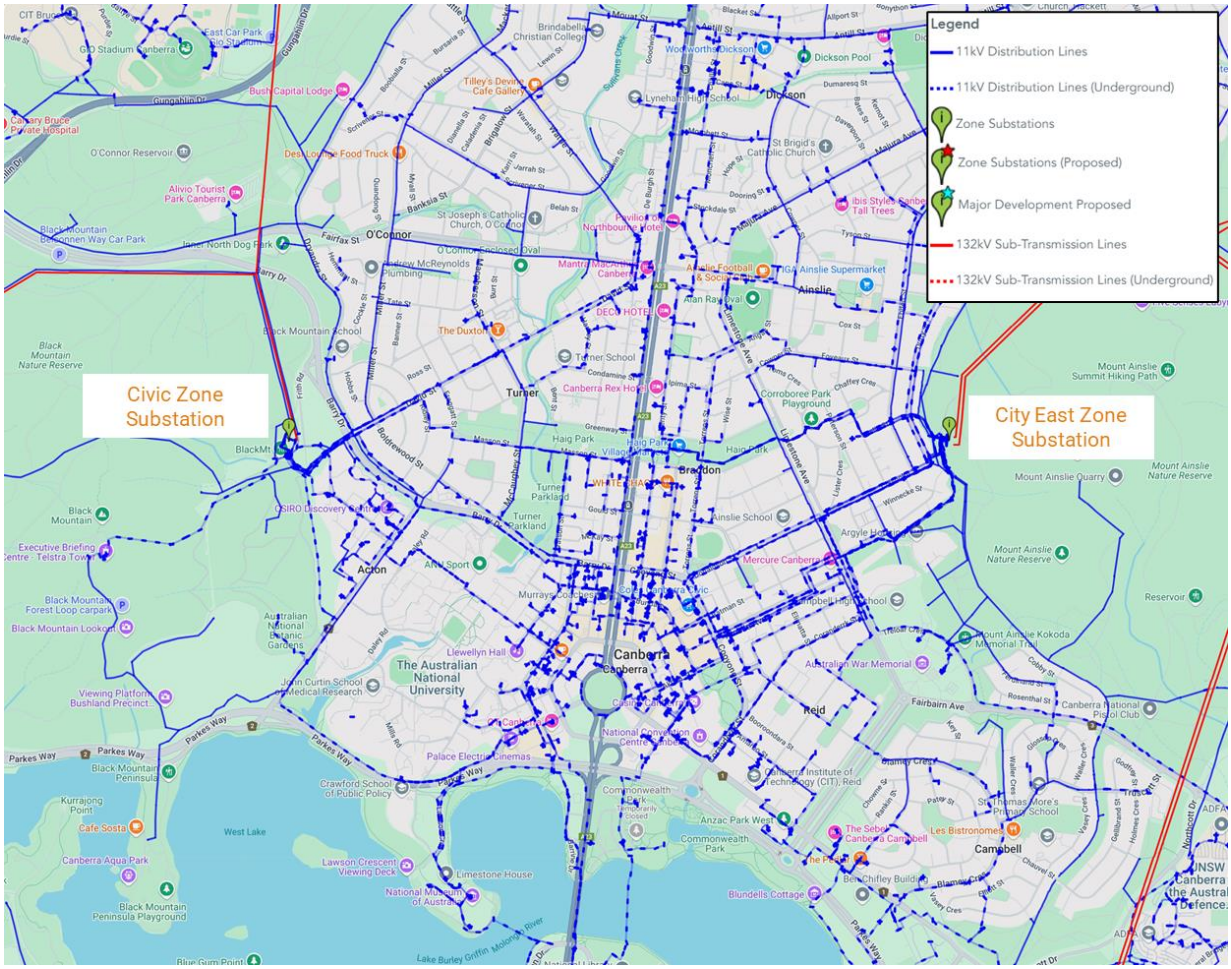

FIGURE 1: GEOGRAPHIC OVERVIEW OF THE EXISTING 132 KV AND 11 KV NETWORK

[7] Evoenergy's Rosetta Data Portal is available from the following weblink: https://apr.evoenergy.com.au/

2.1.2 11 kV Feeders

Evoenergy's 11 kV feeders are typically interconnected through multiple normally open ties. Under contingency conditions, selected open points are closed to enable load transfers and supply restoration.

Feeder capacity ratings are calculated under normal (thermal) and single contingency (firm) conditions for both Summer and Winter operating conditions.

The 11 kV feeders included in the RIT-D study are presented in **Table 2** (overleaf) along with the Summer and Winter firm and thermal rating, and recent demand characteristics such as maximum demand and the season, peak day type and time the maximum demand has occurred in the recent past.

TABLE 2: 11 KV FEEDER CAPACITY RATINGS AND HISTORICAL MAX DEMAND CHARACTERISTICS

11 KV FEEDER	SUMMER RATING (MVA)		WINTER RATING (MVA)		MAX DEMAND (MVA)	PEAK SEASON	PEAK DAY	TIME
	FIRM	THERMAL	FIRM	THERMAL				
Akuna	4.4	5.9	4.9	6.6	1.87	Summer	Weekday	5:00 PM
Binara	4.9	6.5	5.4	7.2	3.27	Summer	Weekday	12:00 PM
Bowen	5.5	7.3	6.2	8.2	3.14	Summer	Weekday	4:00 PM
Bunda	4.5	5.9	4.9	6.6	1.75	Summer	Weekday	4:00 PM
Chisholm	5.2	6.9	5.8	7.7	3.18	Winter	Weekday	8:00 AM
Cooyong	4.7	6.3	5.3	7.1	3.00	Summer	Weekday	1:00 PM
Edinburgh	5.0	6.8	5.5	7.4	4.40	Winter	Weekday	10:00 PM
Edmund Barton	3.4	4.5	3.8	5.0	1.56	Summer	Weekday	4:00 PM
Electricity House	4.7	6.3	5.3	7.0	1.61	Winter	Weekday	8:00 AM
Hobart Long	4.4	5.8	4.9	6.5	4.95	Summer	Weekend	1:00 PM
Hobart Short	4.8	6.4	5.4	7.1	3.07	Summer	Weekday	2:00 PM
Lonsdale	5.4	7.3	6.0	8.0	3.45	Summer	Weekend	2:00 PM
King Edward + Belmore	3.4	4.6	3.9	5.1	3.08	Summer	Weekend	11:00 AM
Quick	3.6	4.8	4.4	5.8	2.83	Winter	Weekday	6:00 PM
Wolseley	4.4	5.9	5.0	6.7	5.07	Winter	Weekend	8:00 AM

2.2 Load Profiles

2.2.1 Annual Load Profiles

The aggregated load profile for the 15 feeders is shown in **Figure 2**. The aggregated load profile is shown for illustration purposes only as solutions for network constraints need to be solved on an individual feeder basis[8]. The demand profile plotted for each individual feeder is plotted in **Figure 3** for the day when the maximum demand occurred (the chart legend shows the feeder's name and day of maximum demand).

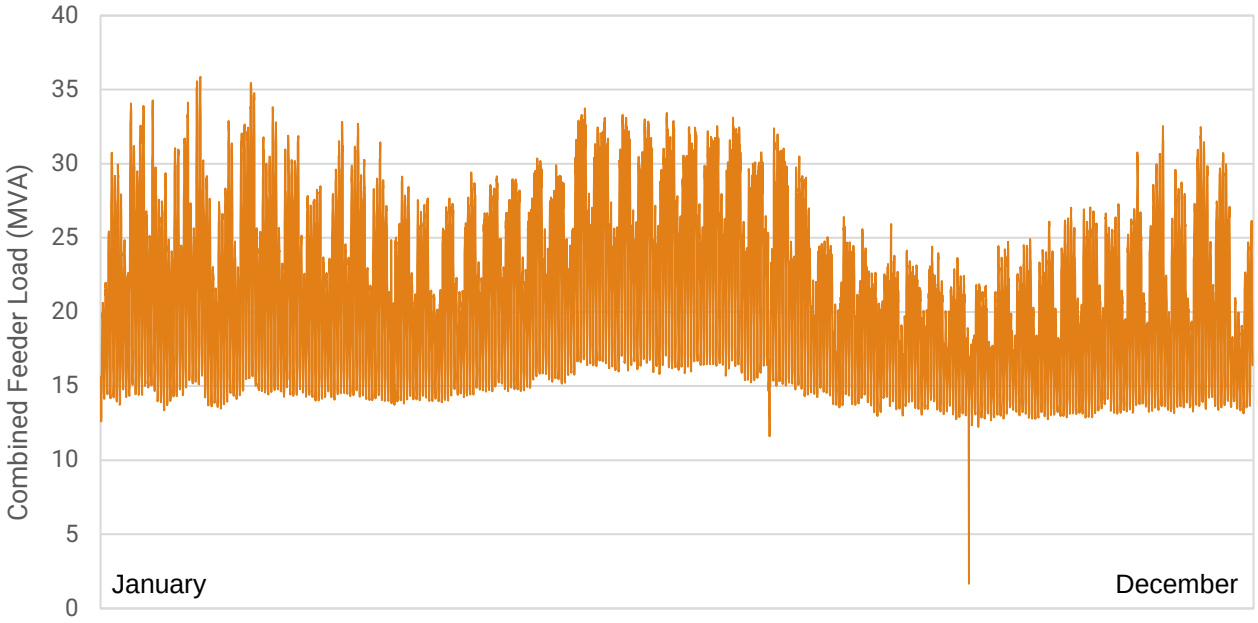

FIGURE 2: AGGREGATED LOAD PROFILE ACROSS 11 KV FEEDERS

[8] Load profile details available at: https://www.evoenergy.com.au/Your-Energy/Demand-Management/Engagement-opportunities

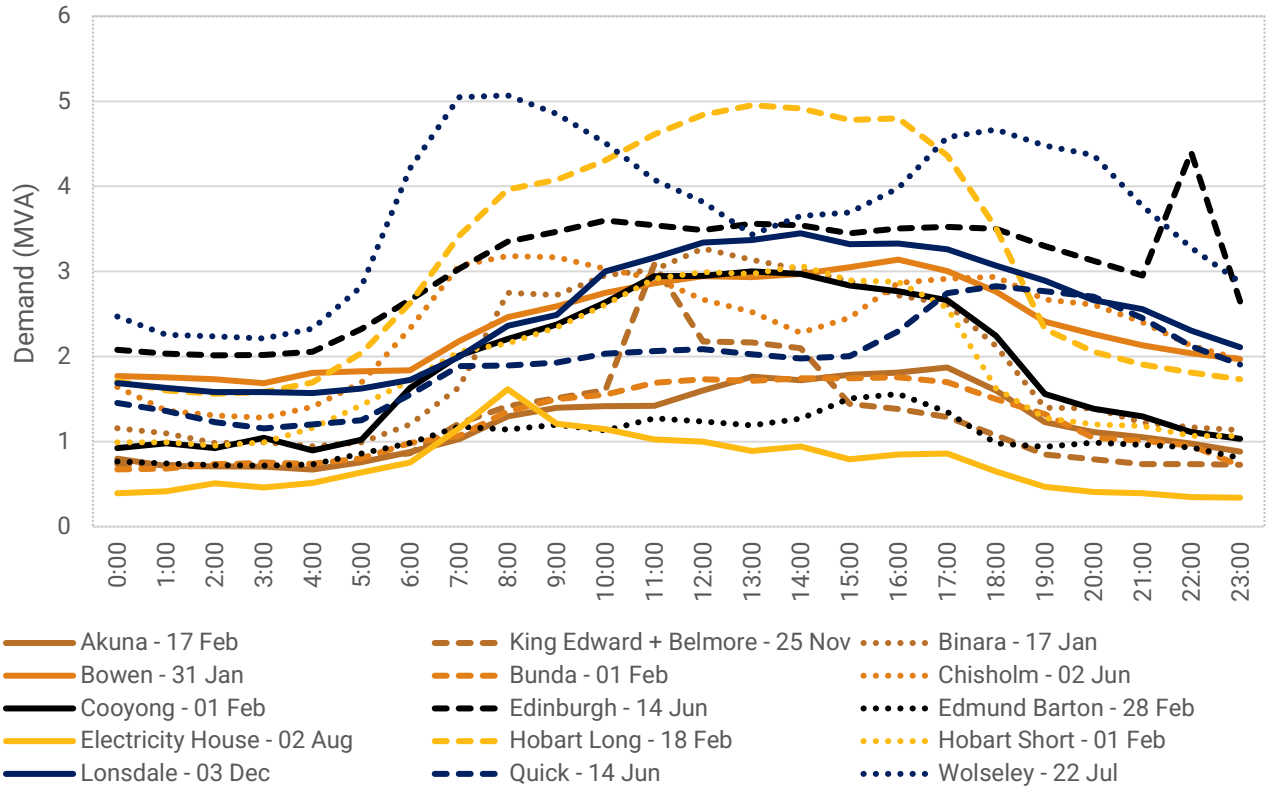

FIGURE 3: DEMAND PROFILE FOR EACH 11 KV FEEDER ON DAY-MONTH OF MAXIMUM DEMAND OCCURANCE

2.2.2 Load Duration Curves

Figure 4 shows the load duration curves for the 15 feeders. This is based on a recent 12-month period.

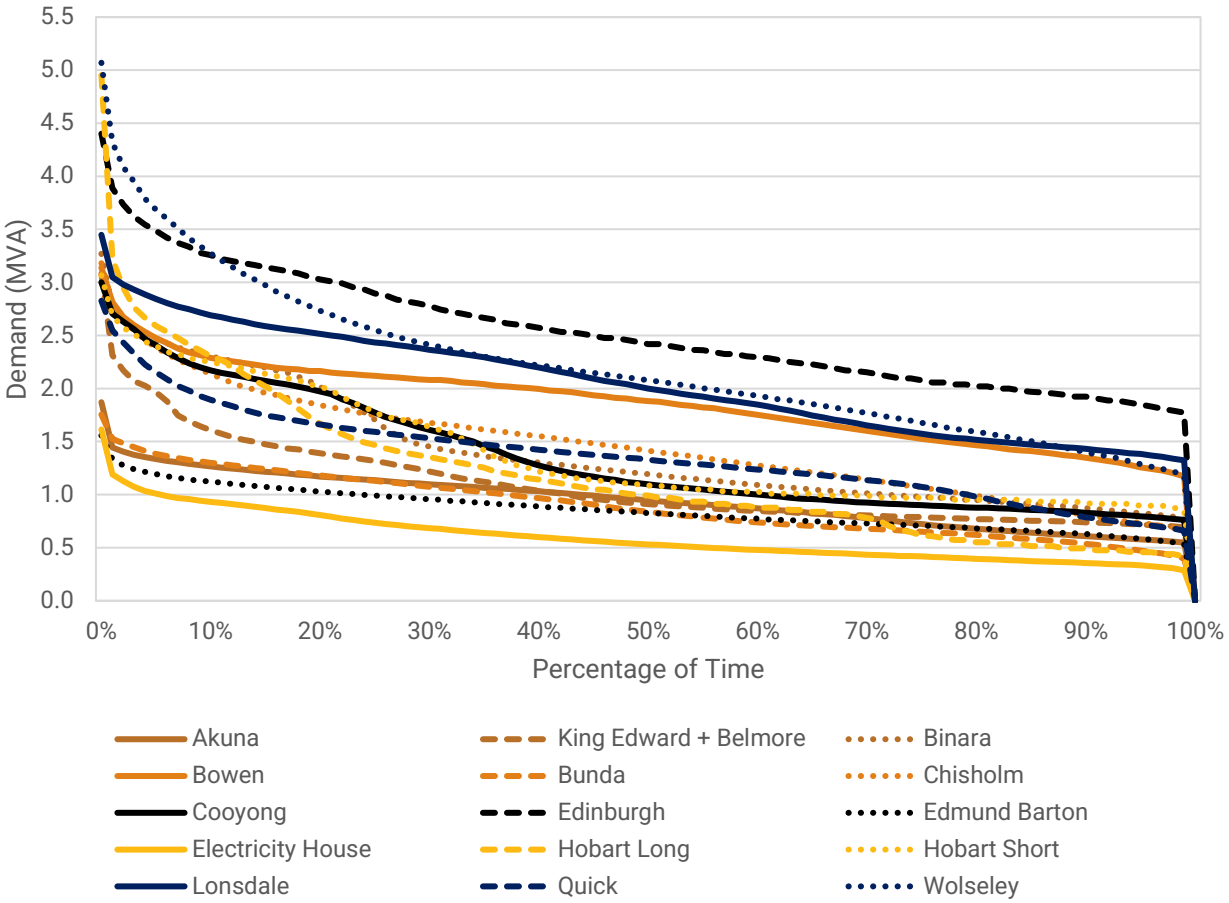

FIGURE 4: HISTORICAL 11 KV FEEDER LOAD DURATION CURVES

3. IDENTIFIED NEED

3.1 Overview

In the assessment of network needs for 11 kV feeders, Evoenergy uses probabilistic methods to analyse the risk cost to customers of capacity constraints and evaluate alternative solutions (options) to address the specific network need.

Evoenergy has identified capacity limitations on fifteen (15) 11 kV distribution feeders into the CBD, with firm and thermal ratings forecasted to be exceeded on most feeders in the coming years based on a 50% Probability of Exceedance (50POE) probabilistic assessment.

There are two key drivers for demand growth causing forecast capacity limitations with the CBD 11 kV distribution network which include:

1. Major new customer loads
2. General demand growth and electric vehicles

The specific network needs associated with these two drivers are presented in detail in the sections below.

3.2 Geographic Overlay

As part of the ACT Government's City Precinct Renewal Program, major residential and commercial buildings are planned to be constructed over the next ten years in the Canberra CBD area. **Figure 5** shows the approximate load growth areas (orange circles) mapped to groups of identified constrained 11 kV feeders assigned to 'Feeder Groups' (refer to Section 3.3 for further details on Feeder Groups).

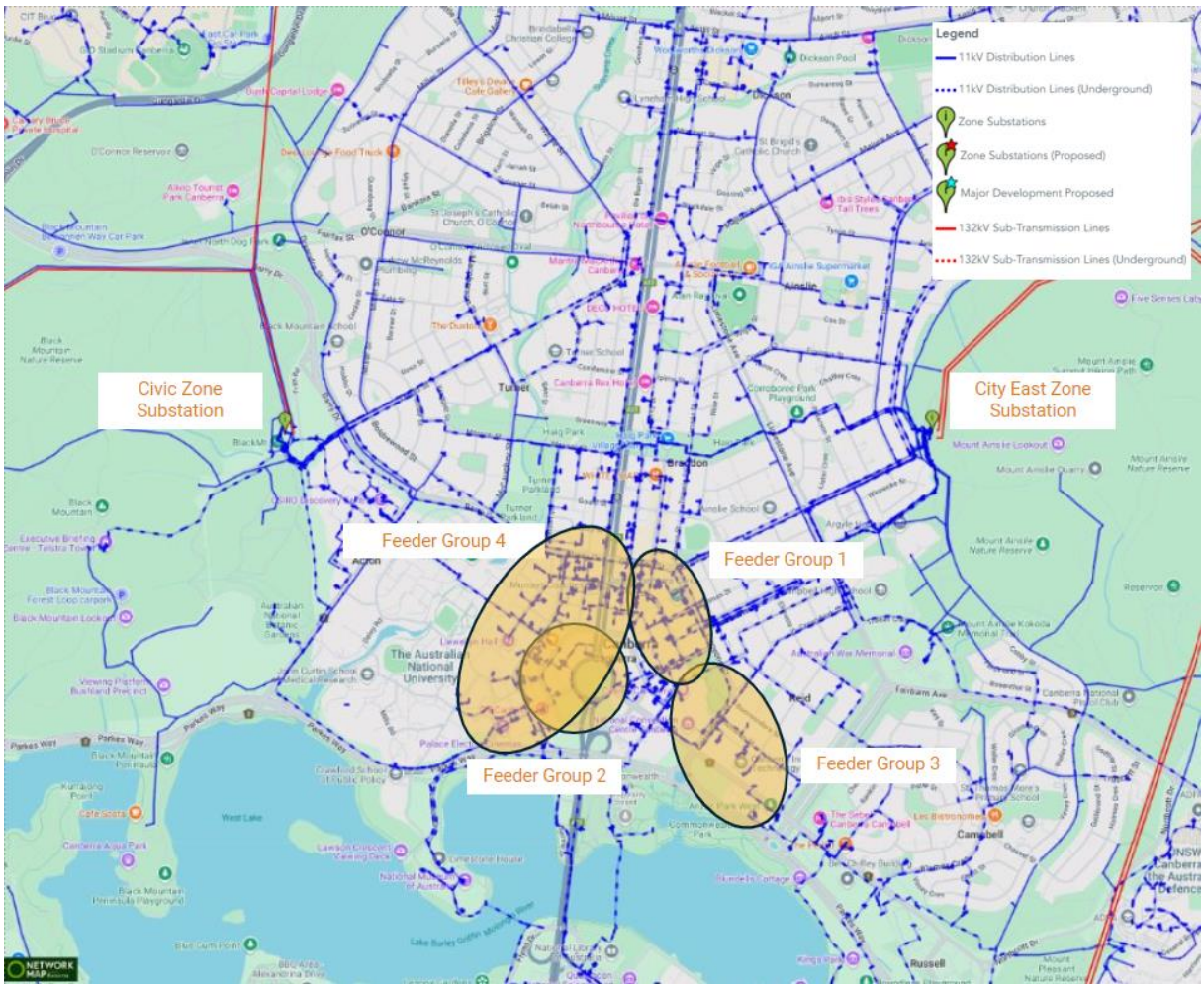

FIGURE 5: GEOGRAPHIC LOCATION OF NEW MAJOR CUSTOMER LOADS

Feeder Groups 1 to 3 represent new major single-point customer loads associated with specific developments. Feeder Group 4 represents demand growth associated with multiple smaller commercial and residential developments.

In addition, the ACT Government's net zero carbon emissions goal by 2045 will help drive the uptake of Electric Vehicles (EV). As a result, EV charging demand is forecast to grow substantially. EV charging requirements have a high demand impact in the CBD due to the high density of residential apartment blocks and anticipated commercial/public EV charging infrastructure.

Predicted load growth from EV chargers are represented is suburb-based forecast with the higher demand growth impact from each suburb represented by darker shading (red sections) in **Figure 6** below. EV charger uptake will increase demand on the 11 kV feeder network in the CBD area as detailed at a suburb level in **Table 3**. The demand impact from EV charging has been allocated to Feeder Group 4.

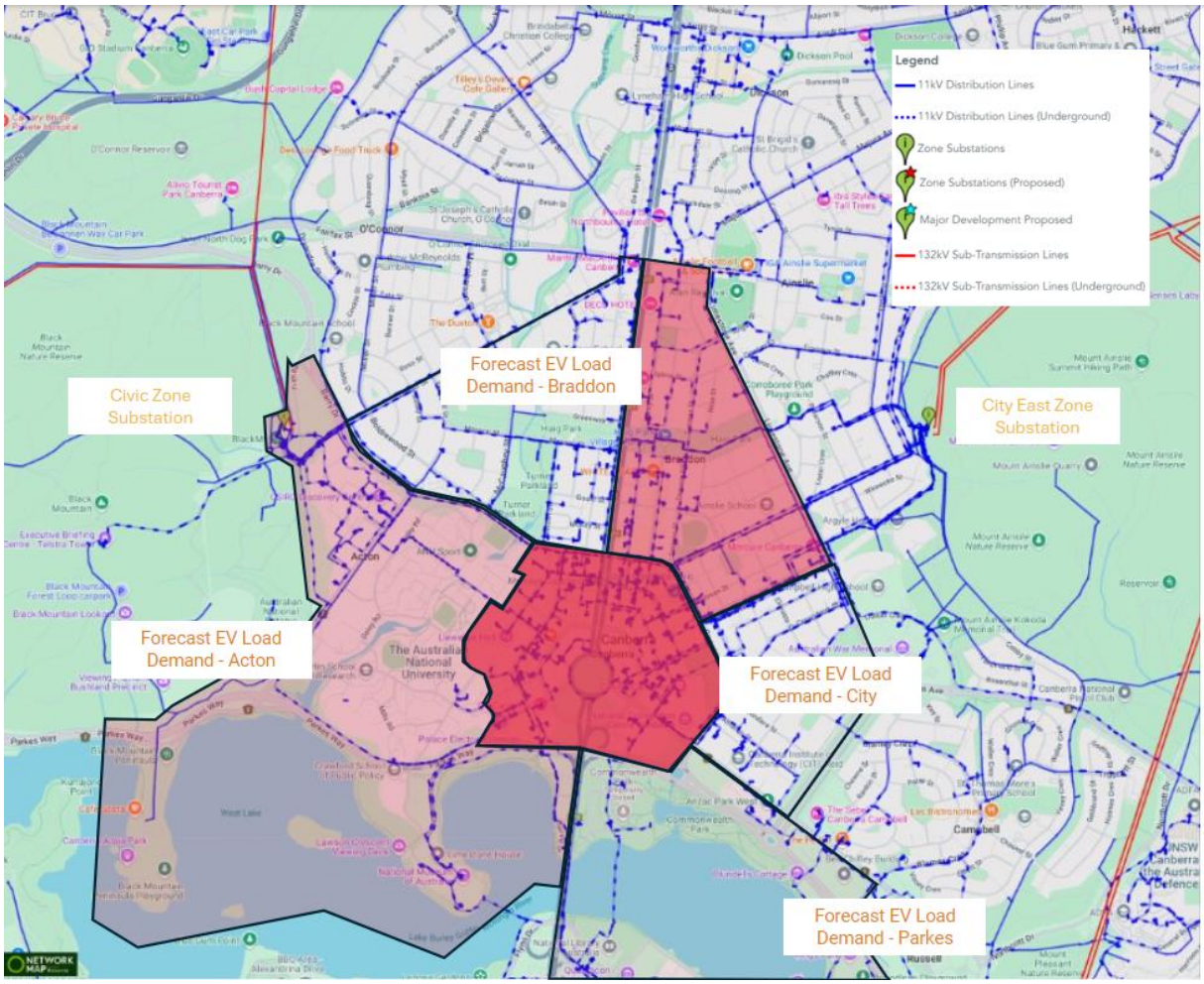

FIGURE 6: GEOGRAPHIC CONCENTRATION OF EXPECTED EV LOAD GROWTH IN CBD AND SURROUNDS

TABLE 3: PREDICTED LOAD GROWTH FROM EVS (MVA)

SUBURB	2025	2026	2027	2028	2029	2030	2031	2032
Acton	0.07	0.12	0.18	0.27	0.4	0.61	0.83	1.11
Braddon	0.23	0.39	0.56	0.82	1.14	1.60	2.00	2.42
Civic	1.24	2.06	3.00	4.35	6.06	8.44	10.52	12.71
Parkes (ACT) – North	0.01	0.01	0.01	0.01	0.02	0.03	0.04	0.04
Parkes (ACT) – South (not shown)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01

3.3 11 kV Feeder Groups

The individual feeders impacted by the new loads have been grouped as per **Table 4**. Grouping is generally based on geographical proximity and the load transfers which would occur to manage the constraints as part of a 'no investment' option (i.e. Base Case). Each feeder grouping is based on a distinct growth driver and analysis was performed to develop individual load forecasts for the impacted feeders. For feeders that are impacted by multiple growth drivers, these feeders appear in more than one feeder group (these feeders include Edinburgh, Edmund Barton, Electric House, Hobart Short and Lonsdale and Quick). The analysis for an individual feeder group was completed assuming the preferred network options identified with the remaining feeder groups have already been implemented to alleviate the forecasted constraints in those other feeder groups.

It is important to note that while Evoenergy would consider non-network proposals for any number of feeder groups, for a non-network solution to be considered as a credible option for a single feeder group, the non-network solution must address the capacity constraints within a given year for all feeders within the feeder group. This is necessary to provide a more economical alternative to the identified preferred network option, through deferring or avoiding the need for the corresponding network option.

TABLE 4: FEEDER GROUPS AND 11 KV FEEDERS

FEEDER GROUP	11 KV FEEDERS
Feeder Group 1	Bunda, Cooyong, Chisholm, Lonsdale, Quick
Feeder Group 2	Edinburgh, Edmund Barton, Electricity House, Hobart Long, Hobart Short
Feeder Group 3	Bowen, Wolseley, Quick
Feeder Group 4	Akuna, Binara, Edinburgh, Edmund Barton, Electricity House, Hobart Short, King Edward + Belmore, Lonsdale

3.3.1 Demand Forecast and Capacity Limits

Evoenergy's existing network supplying the area will be unable to service the expected load growth during the 2024-29 regulatory period, even with optimised load allocations among the existing 11 kV feeder network. If no action is taken, the gap between the demand forecast and existing feeder capacity is expected to arise from 2025 as shown in **Table 5** (overleaf) for each feeder group. The maximum firm and thermal capacities of each feeder is shown for Summer and Winter. Capacity limits are expected to be breached without intervention:

- Yellow denotes load above the firm rating
- Red denotes load above the thermal rating

While thermal constraints are forecasted to occur as early as 2025, Evoenergy will manage these constraints on a case-by-case basis as part of operations in advance of the delivery of the preferred option which will need to be available no later than November 2026.

TABLE 5: FORECAST DEMAND INCREASE FOR AFFECTED 11 KV FEEDERS DUE TO NEW MAJOR CUSTOMER LOADS (MW)

FEEDER	2025		2026		2027		2028		2029		2030		2031		2032	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Feeder Group 1																
Bunda	6.1	5.9	6.7	6.5	6.7	6.5	6.7	6.5	6.7	6.5	-	-	-	-	-	-
Chisholm	5.9	7.5	6.6	8.3	6.6	8.3	6.6	8.3	6.6	8.3	-	-	-	-	-	-
Cooyong	6.0	4.6	6.0	5.6	6.0	5.6	6.0	5.6	6.0	5.6	-	-	-	-	-	-
Lonsdale	7.5	5.8	7.5	7.3	7.5	7.3	7.5	7.3	7.5	7.3	-	-	-	-	-	-
Quick	5.0	5.8	5.0	5.8	5.0	5.8	5.0	5.8	5.0	5.8	-	-	-	-	-	-
Feeder Group 2																
Edinburgh	5.0	6.8	5.5	7.4	6.4	4.7	7.4	5.7	7.9	6.2	-	-	-	-	-	-
Edmund Barton	3.4	4.5	3.8	5.0	3.8	3.0	4.5	3.7	4.5	3.7	-	-	-	-	-	-
Electricity House	4.7	6.3	5.3	7.0	6.5	4.9	6.5	4.9	6.5	4.9	-	-	-	-	-	-
Hobart Long	4.4	5.8	4.9	6.5	5.7	3.7	5.7	3.7	5.7	3.7	-	-	-	-	-	-
Hobart Short	4.8	6.4	5.4	7.1	6.6	5.7	9.5	8.6	9.5	8.6	-	-	-	-	-	-
Feeder Group 3																
Bowen	5.1	4.6	8.4	7.7	8.4	7.7	8.4	7.7	8.4	7.7	8.4	7.7	8.4	7.7	8.4	7.7
Quick[9]	3.8	4.7	4.7	5.6	4.7	5.6	5.3	6.2	5.3	6.2	5.3	6.2	5.3	6.2	5.3	6.2
Wolseley	4.6	6.3	4.5	6.4	4.9	6.8	4.6	6.6	5.0	7.1	5.3	7.5	5.7	7.9	6.0	8.3
Feeder Group 4																
Akuna	3.1	2.9	3.2	3.1	3.4	3.2	3.6	3.4	3.8	3.7	4.2	4.0	4.5	4.4	4.9	4.7
Binara	5.2	4.7	6.5	5.8	6.5	5.9	6.6	6.0	6.7	6.0	6.8	6.2	6.9	6.3	7	7.4
Edinburgh	5.4	5.7	6.0	6.3	6.2	6.5	6.4	6.7	6.7	7.0	7.2	7.5	7.5	7.8	7.9	8.3
Edmund Barton	2.6	2.5	3.6	3.5	4.4	4.3	5.2	5.1	5.2	5.1	5.3	5.2	5.4	5.2	5.4	5.3
Electricity House	2.0	2.1	4.6	4.7	6.8	6.9	6.8	6.9	6.8	7.0	6.9	7.0	6.9	7.0	6.9	7.1
Hobart Short	3.1	3.0	3.1	3.0	5.1	5.0	6.1	6.1	6.1	6.1	6.2	6.1	6.2	6.2	6.2	6.2
King Edward + Belmore	3.8	3.8	5.2	5.1	5.7	5.6	6.2	6.2	6.2	6.2	6.2	6.2	6.3	6.2	6.3	6.3
Lonsdale	3.6	3.4	4.0	3.9	5.1	5.0	5.3	5.1	5.5	5.3	5.7	5.5	6.0	5.8	6.2	6.1

Above Firm
Above Thermal

[9] Note that feeder forecasts in more than one Feeder Group assumes network configuration and load transfer changes associated with constraint alleviation through other feeder group feeder construction, hence the different demand forecasts. This applies for feeders Edinburgh, Edmund Barton, Electric House, Hobart Short and Lonsdale and Quick.

3.3.2 Unserved Energy

Unserved Energy (USE) provides an economic indicator of the reliability impact associated with network constraints, helping to optimise and prioritise investment in feeder augmentation. Augmentation decisions consider the economic cost of USE compared to the cost of augmentation. A cost-benefit analysis ensures investments are economically justified and proportional to the economic impact of unreliability.

Table 6 provides the expected amount and value of USE based on all energy above thermal ratings, and a proportion of energy above firm ratings utilising assumed feeder outage statistics (i.e., probability of unavailability). All USE must be met by the network or non-network solution to be considered credible. As noted previously, Evoenergy is managing forecast thermal constraints and resulting USE on a case-by-case basis in advance of the delivery of the preferred option.

TABLE 6: ANNUAL UNSERVED ENERGY (MWH)

FEEDER	USE EXCEEDING	2025	2026	2027	2028	2029
Feeder Group 1						
Bunda	Firm	0.06	0.12	0.12	0.12	0.12
	Thermal	17.97	211.92	211.92	211.92	211.92
Chisholm	Firm	0.01	0.04	0.04	0.04	0.04
	Thermal	0.00	5.44	5.44	5.44	5.44
Cooyong	Firm	0.04	0.04	0.04	0.04	0.04
	Thermal	0.00	0.00	0.00	0.00	0.00
Lonsdale	Firm	0.04	0.05	0.05	0.05	0.05
	Thermal	1.97	1.97	1.97	1.97	1.97
Quick	Firm	0.03	0.03	0.03	0.03	0.03
	Thermal	0.32	0.32	0.32	0.32	0.32
Feeder Group 1 Total USE (MWh)		**20.44**	**219.92**	**219.92**	**219.92**	**219.92**
Feeder Group 2						
Edinburgh	Firm	0.00	0.02	0.03	0.07	0.18
	Thermal	0.00	7.40	22.45	107.26	320.70
Edmund Barton	Firm	0.00	0.00	0.00	0.00	0.00
	Thermal	0.00	0.00	0.00	0.00	0.00
Electricity House	Firm	0.00	0.00	0.00	0.44	0.44
	Thermal	0.41	0.41	0.41	0.41	0.41
Hobart Short	Firm	0.00	0.02	0.02	0.02	0.02
	Thermal	0.19	28.89	28.89	28.89	28.89
Feeder Group 2 Total USE (MWh)		**0.60**	**36.74**	**51.80**	**137.10**	**350.65**
Feeder Group 3						
Bowen	Firm	0.00	0.09	0.09	0.07	0.07
	Thermal	0.00	53.06	53.06	53.06	53.06
Quick	Firm	0.00	0.01	0.01	0.01	0.01
	Thermal	0.00	0.00	0.00	2.77	2.77
Wolseley	Firm	0.00	0.01	0.01	0.00	0.00
	Thermal	0.00	0.00	0.23	0.00	1.33
Feeder Group 3 Total USE (MWh)		**0.00**	**53.16**	**53.39**	**55.91**	**57.24**
Feeder Group 4						
Akuna	Firm	0.00	0.00	0.00	0.00	0.00
	Thermal	0.00	0.00	0.00	0.00	0.00
Binara	Firm	0.00	0.01	0.01	0.01	0.01
	Thermal	0.00	0.01	0.05	0.10	0.17
Edinburgh	Firm	0.00	0.00	0.01	0.01	0.02
	Thermal	0.00	0.00	0.00	0.00	0.00
Edmund Barton	Firm	0.00	0.00	0.01	0.03	0.04
	Thermal	0.00	0.00	0.00	11.79	14.16
Electricity House	Firm	0.00	0.00	0.00	0.00	0.00
	Thermal	0.00	0.00	0.05	0.09	0.13
Hobart Short	Firm	0.00	0.00	0.00	0.01	0.01
	Thermal	0.00	0.00	0.00	0.00	0.00
King Edward + Belmore	Firm	0.00	0.01	0.01	0.02	0.02
	Thermal	0.00	3.44	12.32	36.34	38.16
Lonsdale	Firm	0.00	0.00	0.00	0.00	0.00
	Thermal	0.00	0.00	0.00	0.00	0.00
Feeder Group 4 Total USE (MWh)		**0.00**	**3.46**	**12.46**	**48.41**	**52.72**

3.3.3 Minimum Energy Capacity Requirements

Table 7 shows the minimum energy capacity (MWh) required each day that the constraints occur to reduce the expected amount of unserved energy associated with capacity constraints.

TABLE 7: ENERGY CAPACITY REQUIRED TO DEFER NETWORK OPTION (MWH) [10]

FEEDER	2025	2026	2027	2028	2029	2030	2031	2032
Feeder Group 1								
Bunda	1.47	7.99	7.99	7.99	7.99	-	-	-
Chisholm	0.00	1.38	1.38	1.38	1.38	-	-	-
Cooyong	0.00	0.00	0.00	0.00	0.00	-	-	-
Lonsdale	1.14	1.14	1.14	1.14	1.14	-	-	-
Quick	0.24	0.24	0.24	0.24	0.24	-	-	-
Feeder Group 1 Capacity Required	**2.85**	**10.75**	**10.75**	**10.75**	**10.75**			
Feeder Group 2								
Edinburgh	4.10	4.10	8.40	18.72	41.11	-	-	-
Edmund Barton	0.00	0.00	0.00	0.00	0.00	-	-	-
Electric House	0.41	0.41	0.41	0.41	0.41	-	-	-
Hobart Long	0.00	0.00	0.00	0.00	0.00	-	-	-
Hobart Short	7.76	7.76	7.76	7.76	7.76	-	-	-
Feeder Group 2 Capacity Required	**12.27**	**12.27**	**16.57**	**26.89**	**49.28**			
Feeder Group 3								
Bowen	0.00	5.22	5.22	5.22	5.22	5.22	5.22	5.22
Quick	0.00	0.00	0.00	1.68	1.68	1.68	1.68	1.68
Wolseley	0.00	0.00	0.23	0.00	0.82	2.09	3.93	8.79
Feeder Group 3 Capacity Required	**0.00**	**5.22**	**5.45**	**6.90**	**7.73**	**8.99**	**10.84**	**15.70**
Feeder Group 4								
Akuna	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Binara	0.00	0.01	0.05	0.1	0.17	0.27	0.43	0.61
Edinburgh	0.00	0.00	0.00	0.00	0.00	0.03	0.59	1.63
Edmund Barton	0.00	0.00	0.00	2.56	2.82	3.19	3.52	3.95
Electric House	0.00	0.00	0.05	0.06	0.08	0.11	0.14	0.2
Hobart Short	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
King Edward + Belmore	0.00	0.58	1.55	3.57	3.63	3.73	3.81	3.89
Lonsdale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feeder Group 4 Capacity Required	**0.00**	**5.22**	**5.45**	**6.90**	**7.73**	**8.99**	**10.84**	**15.70**

3.3.4 Operating Profile

To support the Canberra CBD demand growth area with reliable and secure supply, credible network and non-network options would be required to provide network support from November 2026 during peak demand days when thermal limitations are reached, or during a contingency event such as loss of a feeder. As each feeder as distinct load profiles, Evoenergy has provided load profile data which can be downloaded from our website to assist assessing the suitability of the preferred solution.[11]

[10] note, these figures are rounded, and all feeders in the table have an amount of unserved energy

[11] https://www.evoenergy.com.au/Your-Energy/Demand-Management/Engagement-opportunities

3.4 Applicable Service Standards

3.4.1 Overview

Evoenergy is obligated to provide a high level of supply certainty to our customers, these obligations are stipulated through mandated codes and standards. To meet these standards, Evoenergy continually reviews future network requirements and anticipated customer needs, to ensure that all expected electricity demand can be supplied within the stipulated requirements for safety, reliability, and quality. A failure to meet any or some of these standards would result in negative impacts for customers and fines payable by Evoenergy.

As described in the identified need, without action to support the anticipated growth in electricity demand in the CBD and surrounding area would likely result in Evoenergy breaching its requirements under the service standards it must meet. The identified preferred option is required to ensure that Evoenergy does not breach any of the standards. Service standards applicable to the identified need as per this FPAR include the following:

Utilities Act 2000 (ACT):

- General obligation to provide safe, reliable, efficient services to all parts of the Evoenergy supply network.
- Compliance with other relevant industry and technical codes, e.g.: Consumer Protection Code

Evoenergy's Utility License (Under the Utilities Act 2000):

- Minimise network losses (Schedule 1, Clause 2)
- Adherence to planning and operating requirements for transmission services (66 kV and above)
- Incorporate reliability requirements for the transmission-distribution interface (e.g. 132 kV substations)

Electricity Distribution (Supply Standards) Code:

- Performance standards for nominal voltages, voltage variations and normal operating conditions, voltage fluctuations and flicker, harmonic voltage distortion, voltage unbalance and maximum allowable voltage dips per year.
- Reliability targets for Evoenergy's overall network are as per the Electricity Distribution Supply Standards Code and are targets over the entirety of Evoenergy's network (see below).

The National Electricity Rules:

- Reliability standards as stipulated by the Australian Energy Regulator in their guidelines made under clause 6.28 of the NER.

The ACT Electricity Transmission Supply Code:

- To ensure a stable supply of electricity during maximum demand scenarios and immediately following contingency events, in order to avoid significant costs from involuntary load-shedding.

3.4.2 Contribution To Power System Reliability

Any proposed services must be capable of reliably meeting electricity demand under a range of conditions and must meet all the relevant NER requirements related to grid connection (if that is required as part of the solution).

Evoenergy has obligations under the NER, the Electricity Distributions (supply standards) Code and connection agreements to ensure supply reliability is maintained to customers as per **Table 8**. Failure to meet these obligations may give rise to liability. Proponents of non-network solutions need to be willing to accept any liability that may arise from its contribution to a reliability of supply failure.

TABLE 8: ELECTRICITY DISTRIBUTION STANDARDS CODE ANNUAL RELIABILITY TARGETS

PARAMETER	TARGET	UNITS
Average outage duration (SAIDI)	91.0	Minutes
Average outage frequency (SAIFI)	1.2	Number
Average outage time (CAIDI)	74.6	Minutes

Service Target Performance Incentive Scheme (STPIS) targets set by the AER incentivise performance relating to unplanned interruptions. Evoenergy's STIPS targets for the current regulatory control period are provided in **Table 9** for different network supply categories. All considered potentially credible options must have adequate availability levels to contribute to maintaining reliability performance within these target requirements.

TABLE 9: AER 2024-29 STPIS TARGETS FOR RELIABILITY

PARAMETER	SAIDI TARGET FOR UNPLANNED OUTAGES (MINUTES)	SAIFI TARGET FOR UNPLANED OUTAGES (NUMBER)	EQUIVALENT SERVICE AVAILABILITY (% OF TIME)
Urban	34.398	0.57	99.9938%
Short Rural	52.141	0.59	99.9933%
Whole Network (weighted average)	37.691	0.57	99.9936%

4. OPTIONS ANALYSIS

In accordance with the RIT-D process outlined in section 5.17.4(j) of the NER, a description of each option including the types of non-network solution submissions received in response to the NNOR consultation, must be provided within the FPAR as it was in the DPAR.

As there were no submissions received for non-network solutions, only the network solutions will be discussed in this section.

Network options explored in the NNOR included:

- Utilising existing network capacity (not credible)
- Constructing new 11kV feeders (preferred option)

The first of these options was not considered a credible option due to demand still exceeding both firm and thermal limits in 2026 and 2027 following 11 kV transfers and network configuration. Hence, constructing new 11kV feeders is the preferred network option.

4.1 Network option

4.1.1 The Preferred Option

The preferred option for the purpose of the FPAR is the network option identified in the NNOR. The preferred option will install and commission five new underground 11 kV feeders, four from Civic ZSS and one from City East ZSS and transfer loads to these new feeders to alleviate network constraints. Feeders would be packaged and delivered as per the groups described in **Table 10**.

The installation of five new 11 kV feeders to supply demand growth and new connections in the CBD and surrounding area. The efficiency gains made by the combined delivery of these feeders, provides the highest value compared other network options considered as detailed in the NNOR.

On completion of these works, the forecast constraints on the existing 11 kV network will have been resolved for the duration of the planning window, and sufficient capacity provided to enable planned development, EV adoption and future electrification requirements. The preferred option is expected to provide the greatest reliability and benefit for customers and ensure Evoenergy meets its reliability obligations and targets.

The identified new 11 kV feeders for construction are further detailed in **Table 10**. These new feeder projects combined are expected to be completed and commissioned in 2 separate stages, by November 2026 and April 2027, in advance of the summer peak and winter peak in year 2026 and 2027 respectively. Evoenergy is managing the identified thermal constraints before November 2026 on a case-by-case basis in advance of the delivery of the preferred option. The total initial capital cost of these project is $24.2m in FY24/25 dollar terms.

TABLE 10: NEW 11 KV FEEDERS AS PART OF THE PREFERRED NETWORK OPTION

FEEDER GROUP	FROM	TO	FEEDER CABLE LENGTH	COMPLETED BY	INITIAL CAPITAL COST	OPERATING COST
1	Civic Zone Substation	Intersection of Genge St + Cooyong St	2.85km	Apr 2027	$8.6m	$0.09m/yr
	Civic Zone Substation	Intersection of Cooyong St and Scott's Crossing	2.85km	Apr 2027		
2	Civic Zone Substation	Between Northbourne Ave and Knowles Pl	2.80km	Nov 2026	$3.7m	$0.04m/yr
3	City East Zone Substation	Corner of Parkes Way and Anzac Pde	3.90km	Apr 2027	$8.2m	$0.08m/yr
4	Civic Zone Substation	Corner of London Cct and Knowles Pl	2.80km	Nov 2026	$3.7m	$0.04m/yr

4.1.1.1 Technical Characteristics

The feeder upgrades comprise of works to construct and install new conduits along proposed feeder routes, and the bulk cable laying of feeder lines via the new conduit banks.

The feeder cables themselves will be made up of 2 or 3 sections each, comprising of either 400mm^2 aluminium or 300mm^2 copper cross-sections, depending on the thermal characteristics of the expected operating conditions of each section. The feeders have been designed to support the existing network in the CBD and fully alleviate the forecast constraints.

TABLE 11: TECHNICAL CHARACTERISTICS OF FEEDERS

FEEDER GROUP	FROM	TO	FEEDER CABLE LENGTH	CABLE TYPE	ADDITIONAL CONDUIT
1	Civic Zone Substation	Intersection of Genge St + Cooyong St	2.85km	400mm^2 Al & Cu three-core	New 6 & 4 way conduit
	Civic Zone Substation	Intersection of Cooyong St and Scott's Crossing	2.85km	400mm^2 Al & Cu three-core	New 6 & 4 way conduit
2	Civic Zone Substation	Between Northbourne Ave and Knowles Pl	2.80km	400mm^2 Al & Cu three-core	New 6 & 4 way conduit
3	City East Zone Substation	Corner of Parkes Way and Anzac Pde	3.90km	400mm^2 Al & 300mm^2 Cu three-core	New 6 & 4 way conduits
4	Civic Zone Substation	Corner of London Cct and Knowles Pl	2.80km	400mm^2 Al & Cu three-core	New 6 & 4 way conduit

4.1.1.2 Construction timeframe

Feeder groups 2 and 4 will begin preliminary works in late 2025, with all works completed and new feeders commissioned by November 2026, in advance of the summer demand peak. The remaining feeder groups will begin preliminary construction in 2026, with the majority of works to take place in 2027. Feeder groups 1 and 3 will be completed before April 2027 in advance of the anticipated Winter peak in demand.

4.1.1.3 Costs

The total capex cost estimate for this option is $24.2m in FY24/25 dollars, exclusive of contingency and GST.

4.2 Non-Network options:

4.2.1 Summary of Submissions Received on the NNOR

As part of the RIT-D process, Evoenergy issued a request for non-network solution submissions on the NNOR. Evoenergy engaged with the registered parties in the demand register and coordinated consultation including a public briefing session with potential non-network options providers that was held virtually in February.

Evoenergy received no submissions from non-network providers in response to the NNOR.

4.2.2 Credible Non-Network Options

In order to be considered a credible option, the non-network option must meet the following criteria:

1. The option is able to meet the identified network need.
2. The costs are well defined such that the option can be compared to the network option.
3. The option does not present any material or commercial or technical risks that cannot be managed.

Given that there were no non-network options submitted, no non-network option can be considered as a credible option.

5. ECONOMIC ASSESSMENT OF CREDIBLE OPTIONS

This section outlines the methodology and assumptions used by Evoenergy to complete the economic assessment of all credible options that address the identified need. This includes where applicable; the approach to estimating project costs, market benefits, and modelling scenarios to address uncertainty.

5.1 Methodology

Evoenergy applies a probabilistic planning methodology where the costs and benefits for each credible option are measured against a "no investment" base case.

As outlined in the RIT-D documentation, Evoenergy has shown that the preferred network option to build additional feeders to support load growth in the CBD and surrounding area has a higher NPC than the 'no investment' base case. The "do nothing" option breaches Evoenergy's obligations under the ACT Electricity Transmission Supply Code 201623, section 4.1.2: *continue to allow electricity supply at maximum demand immediately and automatically after a credible contingency event and the potential unserved energy risk. In addition to this, in a contingency event the 'do nothing' option results in thermal limits of existing network assets being breached and the potential for large amounts of involuntary load-shedding, which drives large unserved energy costs that will be borne by customers (and Evoenergy through the Service Target Performance Incentive Scheme (STPIS) mechanism).*

The NNOR outlined a methodology to assess non-network options against to meet the demand growth forecast expected in the CBD and surrounds. Under this methodology the costs and risks (predominantly the risk of unserved energy) are calculated for each scenario and weighted by the probability assigned to the scenario.

5.2 Economic Assessment Timeframe

Evoenergy's planning considers scheduled new customer connections and forecast EV load growth for 2024–2029. Due to the uncertainty in long-term forecasts for new point loads, a 5-year horizon is used using the period out until 2029. Non-network options that defer network investments may also delay future stages, however Evoenergy cannot commit to upfront costs for uncertain future deferral benefits.

5.3 Electrical Demand

The following summarises Evoenergy's planning assumptions relating to electrical demand and details how the identified need is defined.

5.3.1 Scenarios

Evoenergy plans its distribution network with 50% Probability of Exceedance (POE) demand forecasts. Maximum demand forecasts include new block loads from annual developments, using approved and pending developer applications to estimate new connections in the CBD and surrounding areas as well as EV load projections developed at the suburb level.

5.3.2 Load Profile

When evaluating the financial costs and USE implications of non-network submissions, Evoenergy uses historical feeder load profiles. These profiles reflect customer electricity usage in the area and are reasonable for forecasting, as new developments are expected to mirror existing load patterns. Details of the feeder load profiles for the proposed network options are provided as an additional attachment found on Evoenergy's website.[12]

5.4 Load Transfer Capability and Supply Restoration

A significant number of feeders were assessed to address the identified constraints, with varying capabilities for load transfer and restoration following network failures. The maximum demand forecast for the CBD and surrounding areas incorporates all feasible load transfers to prevent exceeding power rating limits in the existing 11 kV network. Evoenergy will manage thermal constraints forecast for 2025 and into 2026 on a

[12] Available at: https://www.evoenergy.com.au/Your-Energy/Demand-Management/Engagement-opportunities

case-by-case basis through operational management. However, from summer 2026 and winter 2027 onwards, thermal constraints peak, and some supporting feeders are projected to exceed their thermal limits with large USE costs associated with those limits being exceeded.

Given the existing constraints and the lack of additional load transfer options beyond 2026, additional capacity or significant demand reduction will be required.

5.5 Value of Customer Reliability

Evoenergy has applied a Value of Customer Reliability (VCR) between $39.24/kWh and $44.39/kWh of USE. These values have been chosen to stay consistent with the figures provided in the NNOR which are based on the AER's 2022 VCR Annual Adjustment Summary, using the following:

- ACT residential VCR of $23.79/kWh ($2022) and commercial VCR of $49.54/kWh ($2022).
- A residential weighting of between 40% and 20%.
- A commercial weight of between 60% and 80%.

This aligns with Evoenergy's Risk Value Framework and the regional characteristics.

The AER's CPI-X approach for annual VCR escalation assumes CPI (Consumer Price Index) adjustments with potential changes in customer preferences (X). Evoenergy, however, assumes no change in preferences, so VCR values will increase only by CPI. As Evoenergy's assessment is in real terms, VCR values remain constant over the assessment period.

5.6 Cost Estimates

Evoenergy estimated capital costs for the preferred network option has an accuracy of ±30%. Operating costs for new distribution assets were assumed as 1% of capital costs.

5.6.1 Market Benefits

In the absence of a credible non-network option to assess, Evoenergy has determined that there are no relevant market benefits to include in the assessment. As the primary consideration for the identified need is unserved energy cost, additional market benefit considerations, such as avoided emissions are considered negligible when compared with the cost of unserved energy.

5.6.2 Discount Rate

A discount rate of 5.85%[13] has been applied in the initial assessment of options considered in this report. This corresponds to the rate in Evoenergy's 2024-2029 regulatory approval from the AER. This is the regulated (nominal vanilla) WACC and all values discounted using this rate are in nominal FY24/25 dollar terms.

[13] https://www.aer.gov.au/system/files/2024-04/AER%20-%20Final%20Decision%20-%20Overview%20-%20Evoenergy%20-%202024-29%20Distribution%20revenue%20proposal%20-%20April%202024.pdf

5.6.3 Results of Net Present Value Analysis

Table 12 shows the summary of results of the net present value analysis for the preferred option. The net present value of only the network option is summarised as it is the only option considered in this report.

TABLE 12: NET PRESENT VALUE RESULTS SUMMARY

Credible Option	PV - Capex	PV - Opex	NPC	PV – Benefits*	NPV
Network option – Feeder upgrade ($m)	-$22.3	-$1.2	**-$23.5**	$72.7	**$49.2**

The preferred option to address the identified need has a net present cost (NPC) of $23.52m, which is the lowest NPC option. The preferred option also has the greatest NPV with a value of $49.16m.

6. RECOMMENDATION ON PREFERRED OPTION

Evoenergy has identified the network option to address the identified need in Canberra CBD and surrounding area as described below.

6.1 Option 1: Construct New 11 kV Feeders (Preferred Option)

The recommended option is to proceed with the preferred network option to install and commission an additional five 11kV feeders to supply additional load in the Canberra CBD. The scope of work includes construction of conduit banks, bulk cable laying and the connection to the Civic and City East zone substations. The estimated construction timeline is provided in **Table 13**, with the first stage of works expected to be completed and commissioned prior to summer peak 2026.

TABLE 13: EXPECTED CONSTRUCTION TIMELINE

Feeder group	Activity	Date
1 + 3	• Design and Development	September 2025
	• Build and Execute	April 2027
2 + 4	• Design and Development	September 2025
	• Build and Execute	November 2026

This is the preferred network solution identified in the NNOR and DPAR and meets the need to ensure stable and secure electricity supply to the CBD in order to accommodate expected demand growth. The total project cost of this recommended option for Evoenergy is estimated to be $24.2M in FY24/25 dollar terms.

Based on the economic assessment outcomes, the proposed preferred option (network option) satisfies the RIT-D.

7. SUBMISSIONS AND NEXT STEPS

7.1 Submissions Received on the DPAR

As part of the RIT-D process outlined in Section 1.1, Evoenergy issued a request for submissions on the matters set out in the DPAR, including the proposed preferred option, and carried out a consultation period that concluded on 16 May 2025.

There were no submissions received on the DPAR.

7.2 Next Steps

This FPAR represents the final stage of the RIT-D process. Evoenergy intends to commence work on delivering the preferred option (network option).

Any queries in relation to this RIT-D should be lodged via email to: RIT@evoenergy.com.au

In accordance with the provisions of NER Clause 5.17.5, Registered Participants, AEMO, interested parties, non-network providers and persons registered on Evoenergy's demand side engagement register may, within 30 days after publication of this report, dispute the conclusions made by Evoenergy in this report with the AER based on a manifest error in calculations or application of the RIT-D. Dispute notifications should be sent via email to RIT@evoenergy.com.au by 18 June 2025 at 5pm. If no formal dispute is raised, Evoenergy will proceed with the preferred option (network option).

7.3 Timeline

An overview of the timeline, from the publication of this FPAR to when the preferred option is required to be operational, is provided in **Table 14**.

TABLE 14: TIMELINE

ACTIVITIES	DATES	STATUS
Publish NNOR and request for submissions	20 Dec 2024	Completed
Consultation period for non-network providers to provide submissions	20 Dec 2024 to 20 Mar 2025	Completed
Public briefing session during consultation period (details to be confirmed)	13 Feb 2025	Completed
Evoenergy review of submissions received (non-network proposals)	Mar 2025	Completed
Publish Draft Project Assessment Report (DPAR)	04 Apr 2025	Completed
Consultation period for DPAR	04 Apr 2025 to 16 May 2025	Completed
Publish Final Project Assessment Report (FPAR)	19 May 2025	Completed
Preferred option operational	Nov 2026	Planned

APPENDIX A – DEFINITIONS AND ABBREVIATIONS

TABLE 15: DEFINITIONS

Term	Definition
ACT government – Electrical Inspectorate	The ACT Government Electrical Inspectorate is the inspecting authority in the ACT and is responsible for inspecting and approving the consumer's electrical installation
Continuous rating	Substation rating capable of continuous reliable operation (24/7)
Demand response	A change from normal mode of load operation induced by a signal triggered by a network constraint or other constraint, to reduce demand for energy or market ancillary services within a region
Embedded generating system	A system comprising of multiple embedded generating units (e.g. solar PV system with a battery storage system)
Embedded generating unit	A generating unit connected within a distribution network and not having direct access to the transmission network
Emergency rating	Substation rating above nameplate ratings capable of reliable operation for short duration. Operating assets at this rating accelerates loss of asset life thus exposure to these conditions is limited
Evoenergy	Evoenergy is the ACT's principal Distribution Network Service Provider (DNSP) and is responsible for the distribution of electricity to all customers within the ACT
Feeder	Typically, these are 11kV electricity distribution conductors / cables, for high voltage bulk electricity distribution within the network.
Firm delivery capacity	Maximum allowable output or load of a network or facility under single contingency conditions, including any short-term overload capacity having regard to external factors that may affect the capacity of the network or facility[14]
Frequency control and ancillary services	Services used by the energy market operator to maintain the frequency of the system within the normal operating band, which functions to provide a fast injection or reduction of energy to manage supply and demand, respectively
High Voltage (HV)	Any voltage greater than 1 kV AC
Load centre	Regions on the electricity distribution network close to load/centres of demand
Low Voltage (LV)	The mains voltages as most commonly used in any given network by domestic and light industrial and commercial consumers (typically 230 V)
Network	Evoenergy's distribution network
Non-network provider	A person who provides non-network solutions; proposing to become a generator (the relevant owner, operator or controller of the generating unit (or their agent))
RIT-D proponent	The Network Service Provider applying the regulatory investment test for distribution to a RIT-D project to address an identified need[15]
Thermal constraint	A thermal limitation on the capability of a network, load or generating unit such that it is unacceptable to either transfer, consume or generate the level of electrical power that would occur if the limitation was removed
Utilities Technical Regulation Team	The ACT Government team responsible for the technical administration of utility requirements and administration of the Utilities (Technical Regulation) Act 2014
Value of Unserved Energy	A quantified measure of the resource availability to continuously serve all loads at all delivery points while satisfying all planning criteria, results involve analysing all hours of a particular year and calculations are presented as units of currency
Weighted average cost of capital	Relevant weighted average cost of capital for a network service provider for a regulatory control period, being the return on capital for that network service provider for that regulatory control period calculated in accordance with National Electricity Rules

[14] As per definition from National Electricity Rules for *firm delivery capacity*
[15] As per definition from National Electricity Rules *for RIT-D proponent*

TABLE 16: ABBREVIATIONS

AC	Alternating Current
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AS	Australian Standard
AS/NZS	A jointly developed Australian and New Zealand Standard
CAIDI	Customer Average Interruption Duration Index
CBD	Central Business District
CEC	Clean Energy Council
CPI	Consumer Price Index
DER	Distributed Energy Resource
DNSP	Distribution Network Service Provider
DSE-RIP	Demand Side Engagement Register of Interested Parties
EV	Electric Vehicle
FCAS	Frequency Control Ancillary Services
FAQ	Frequently Asked Question
FY	Financial Year
HV	High Voltage
LV	Low Voltage
MW	Megawatt
NEM	National Electricity Market
NER	National Electricity Rules
NNOR	Non-network options report
NPC	Net Present Cost
ODAF	Oil Directed, Air Forced
ODAN	Oil Directed, Air Natural
ONAN	Oil Natural, Air Natural
PoE	Probability of Exceedance
PV	Photovoltaics
RIT-D	Regulatory Investment Test for Distribution
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
STPIS	Service Target Performance Incentive Scheme
USE	Unserved Energy
UTR	Utilities Technical Regulator
V	Volt
VA	Volt-Ampere
VAr	Volt-ampere-reactive
VCR	Value of Customer Reliability
W	Watt
WACC	Weighted Average Cost of Capital
ZSS	Zone Substation