



Part of the Energy Queensland Group



Operational Update

EQL Contestable Works

Process Change – LV Drop Requirements

Issue # C-0060 – 7 August 2024

Target Audience

Accredited Service Providers (Ergon & Energex) – Design Consultants

Introduction

Process Change - LV Drop Requirements

To support the Contestable Works Department in the consistent application of Low Voltage Planning requirements associated with the release of the Energy Queensland Joint Supply and Planning Manual Version 7, standardisation of LV Drop modelling approach and provision of submissions (concepts, designs and applications) is required to ensure compliance and efficiency.

This process change will assist the Accredited Service Provider in the provision of a compliant package and the Contestable Works Department in the efficient evaluation of submissions to prove the suitability of the proposed low voltage network. This process will ensure consistent parameters are applied across all submissions.

Low Voltage Network Modelling Requirements

The accuracy and acceptance of the modelling is impacted by three key aspects:

1. Input Parameters
2. LV Drop Software Configuration
3. Modelling Package Requirements

Utilising the correct input parameters & configuring LV Drop appropriately enables distribution network planners and designers to effectively model and identify network limitations such as plant and equipment overloads / network under voltages.

The requirements for each of these three aspects are documented as follows:

Input Parameters

After Diversity Maximum Demand (ADMD)

After Diversity Maximum Demand is the key input associated with network loading. An appreciation of the load / development type (Small / Standard / Prestige dwelling / Commercial / Industrial) and load category (Greenfield / Brownfield) is essential in selecting the appropriate ADMD for the network being modelled.

The ADMD's from Tables 24-27 of the Energy Queensland Joint Supply and Planning Manual Version 7 are to be applied for Standard Dwellings.

Any new or upgraded load is deemed as Greenfield.

Brownfield loads are existing loads in established areas. However, not all existing loads are deemed as Brownfield. Affluent areas have a significantly higher ADMD. Designers are to be aware of more specific requirements of ADMD as a result of local knowledge. *As a general guide, any load / developments older than 25 years in areas that have generally NOT been modernised are treated as Brownfield.* Given the modernisation of older established areas, Contestable Works Department must be consulted prior to the use of this load category outside of the above general advice.

When assessing a consultant's concept advice at enquiry stage, Contestable Works may determine to use "alternative options" to re-evaluate calculated voltage drops that are greater than the 5% tolerance within a brownfield area only. Consultants will not have the opportunity to use these options.

LV Drop Data Sets

To ensure consistency across all LV Drop studies, EQL will provide Conductor Type List (conductors.xml) & Transformer Type List (transformers.xml) data files which are to be used as the default study files (refer to upcoming Standard Alert).

The transformer ratings below in amps are based on 240V as per Energy Queensland Joint Supply and Planning Manual Version 7 Table 14:

Distribution transformers - assigned loadings for well-ventilated situations, namely Domestic (125%), Commercial (115%) & Industrial (100%) of nameplate.

Tx Size	Rating (amps)/Load Category		
	Domestic	Commercial	Industrial
315 kVA	547	504	438
500 kVA	869	799	695
750 kVA	1304	1199	1043
1000 kVA	1739	1600	1391

Voltage Drop Compliance Requirements

As per Energy Queensland Joint Supply and Planning Manual Version 7 Table 5: Maximum LV drop by feeder type, namely **Urban** (5%), **Short Rural** (2%) and **Long Rural** (0.6%).

Notes:

The feeder classification will be provided by Contestable Works at project enquiry stage.

Compliance is assessed against the volt drop in the mains which is from the transformer to the DNSP service point (excludes the service line 1%).

LV Drop Software Configuration

1. All Modelling will be Multi-Stat Edition / 3 phase / Unbalance Factor of 1.8.
2. All Voltage Drops to be displayed in percentage.
3. Confidence Factors of:
 Set A (Residential) : 1.65 (Tx) / 2 (Cable) / 2 (Voltage Drop)
 Set B (C&I) : 2 (Tx) / 2 (Cable) / 2 (Voltage Drop)

Energex Configuration

243V Source / 238V Nominal, Transformers with impedances utilised.

Options [DefaultStudy - 5.7.24.xml]

Study Defaults | Diagram Options | Paths | Help

Edition
☐ Standard Edition
☒ Multi-Stat Edition

Default Transformer
 315KVA - D

Voltage Data
☐ Use AS61000.3.100
Voltage
 Source : 243.00 V.
 Nominal : 238.00 V.
Volt Drop Threshold
☐ \$ ☐ Percentage ☒ Volts

Load Data
 Entered as: ☐ Per Phase ☒ 3 Phase Total
 Default P.O.A. : 1.00
 Unbalance Multiplier : 1.8
 MPS Unbalance Multiplier : 0
Default Load Type
 EN10-Standard RES Gr

Segment Data
Default Conductor
 AI UG
 240AI/4C XLPE
Default Length
 25 m
Default Construction
 \$ 0.00
Default Pillar
 \$ 0.00

Node Data
Default Construction Cost
 \$ 0.00

Confidence Factors

	Transformer Loading:	Cable Loading:	Voltage Drop :
Set A :	1.65	2.00	2.00
Set B :	2.00	2.00	2.00

OK Close

ERGON Configuration

230V Source / 230V Nominal, Low Impedance Transformers utilised

Options [DefaultStudy - 5.7.24.xml]

Study Defaults | Diagram Options | Paths | Help

Edition
☐ Standard Edition
☒ Multi-Stat Edition

Default Transformer
 LOIMP

Voltage Data
☐ Use AS61000.3.100
Voltage
 Source : 230.00 V.
 Nominal : 230.00 V.
Volt Drop Threshold
☐ \$ ☐ Percentage ☒ Volts

Load Data
 Entered as: ☐ Per Phase ☒ 3 Phase Total
 Default P.O.A. : 1.00
 Unbalance Multiplier : 1.8
 MPS Unbalance Multiplier : 0
Default Load Type
 EN10-Standard RES Gr

Segment Data
Default Conductor
 AI UG
 240AI/4C XLPE
Default Length
 25 m
Default Construction
 \$ 0.00
Default Pillar
 \$ 0.00

Node Data
Default Construction Cost
 \$ 0.00

Confidence Factors

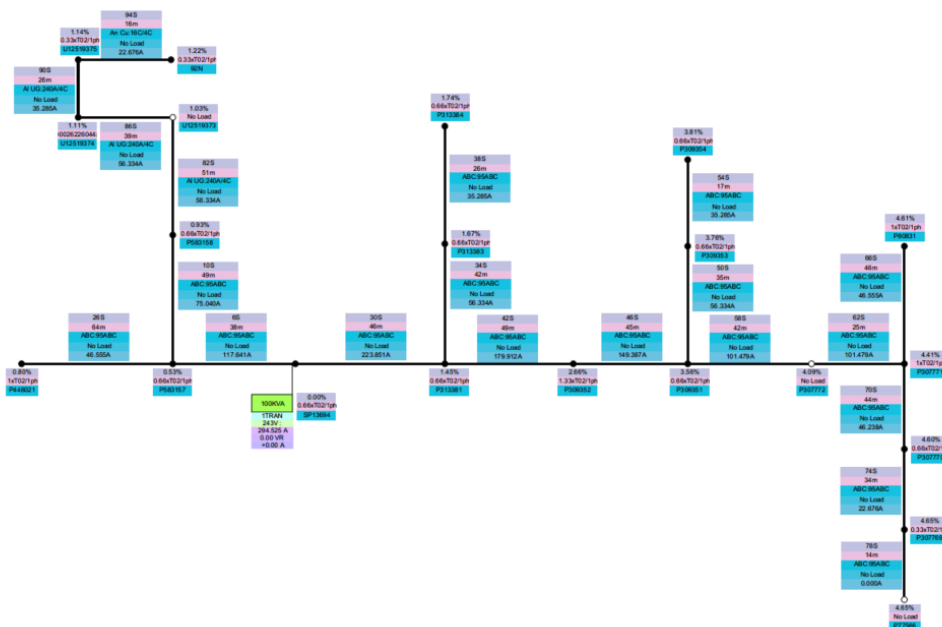
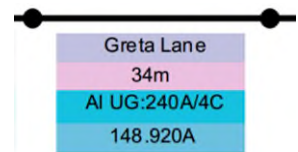
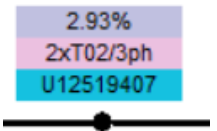
	Transformer Loading:	Cable Loading:	Voltage Drop :
Set A :	1.65	2.00	2.00
Set B :	2.00	2.00	2.00

OK Close

Note: The published settings in Appendix G of the Joint Supply and Planning Manual are superseded by the information provided in this operational update.

Modelling Package Requirements

1. All loads are to be applied at nodes ONLY.
(No loads on cable segments).
2. All cable segments are to be discretely modelled.
(Including all 16mm² UG cables).
3. Voltage Drop %, Load Type & Asset number to be displayed at each node.
4. Segment location, length, conductor type & load in amps to be displayed on each segment.
5. LV Drop study files are to be submitted with xml (LV Drop file) & PDF (including system diagram & system options) formats.
6. Studies to be set out to represent geographical layout. (Example below)



Implementation Date

These changes are effective from **1st September 2024** for all new projects, or when a new NCEC, SESA or PLSA is required for an existing project.

For more information contact:

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