



2020/21 Summer New 11kV Feeder (OE13) Non Network Proposal Request

20.02.20



1. Summary

United Energy (UE) undertakes feeder augmentation works to address the capacity limitations in the distribution network when the cost of the expected overload risk posed by such limitation outweighs the cost of addressing it. In the absence of non-network solutions, UE utilises traditional augmentation options (i.e. network options) to alleviate the identified feeder limitations. The solution adopted for each site is based on an economic evaluation of costs and benefits.

This document has been prepared to invite proposals from non-network solution providers to provide alternative options to the proposed new 11kV feeder (OE13) network project that is planned for summer 2020/21.

This document is in line with the minimum project evaluation requirements under the Demand Management Incentive Scheme for a request for demand management solutions. UE welcomes written submissions from interested parties to address the issues described in this request on or before 11th March 2020. UE also recommends engagement as early as possible in order to provide any further information required or to enable us to assist in developing proposals.

2. Background

2.1. Project Need

The primary need for this project is insufficient thermal capacity in 11kV feeders (OAK22, OE14 and OR35) limiting the ability of UE to supply the growing load in the Oakleigh area.

OE04 feeder exceeded its summer rating during the 2017/18 summer (at 132%). In order to alleviate this thermal constraint, OE04 was offloaded to adjacent feeders. This transfer has been in place during the 2018/19 and 2019/20 summers. Due to load growth and load transfer, the adjacent feeders, namely OAK22, OE14 and OR35 are now heavily loaded and are forecast to become overloaded. These three feeders also have 11kV connectivity with each other, which limits the ability to transfer load and manage customer loads during outage conditions under peak load periods.

The customer base supplied from OAK22 is predominantly commercial and has a generally consistent daily load profile. The demand is relatively less sensitive to temperature and therefore the thermal constraint exists even during mild summer days. OR35 predominantly supplies residential customers and therefore this constraint occurs on high demand periods – typically when the ambient temperature exceeds 35°C. OE14 supplies a mixture of commercial and residential customers and has a similar profile to OAK22.

2.2. Preferred network option

The preferred network option to address the identified need is to create the new OE13 feeder and to rearrange the distribution network in this area. This option will address the capacity issues associated with all three feeders, OAK22, OE14 and OR35. The estimated direct cost of this solution is \$907k.

2.3. Non-network alternatives

UE builds new electricity infrastructure to meet the increasing demand for electricity by customers. This may involve augmentation of the network – for example, installing new transformers, new feeders or new powerlines. These are generally referred to as ‘network solutions’. The establishment of these assets is capital intensive and it may be economical (in some cases) to implement alternative solutions (i.e. non-network solutions). Such lower cost non-network solutions could be temporary or permanent – however, it must be able to defer the proposed network solution by at least one year.

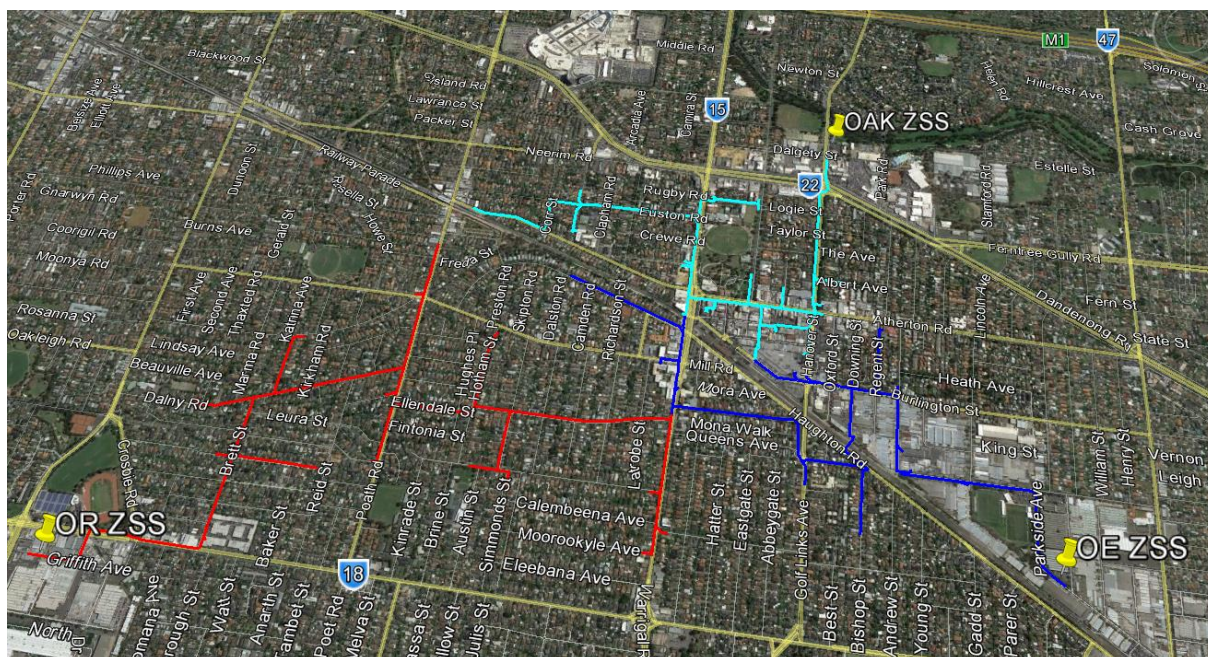
Non-network solutions can involve either the reduction of customer electricity demand during peak demand periods (i.e. demand management) or direct supply of electricity into the grid at the distribution level (i.e. generation and storage).

Effective and prudent use of non-network solutions can reduce the need for network augmentation and associated maintenance costs resulting in lower electricity bills for consumers.

3. Non-network Option Requirements

Embedded generation, storage or demand management schemes to reduce the magnitude of maximum demand within the OAK22, OE14 and OR35 supply areas could defer or avoid the proposed network augmentation. The area covered by these three feeders (OAK22 in Cyan, OE14 in Blue and OR35 in Red) is presented in **Error! Reference source not found.**

Figure 1: Geographic coverage of the constrained area



A typical load profile of these three feeders are presented in the figures below. Based on the demand pattern of the three feeders below, UE anticipates demand management will be required for a:

- 4 hour window (12:00 to 16:00) on OAK22 on weekdays greater than 35 degrees Celsius.
- 5 hour window (12:00 to 17:00) on OE14 during weekdays greater than 35 degrees Celsius.
- 3 hour window (17:00 to 20:00) on OR35 greater than 35 degrees Celsius.

Figure 2: Typical load profile of OAK22 feeder on a high demand day

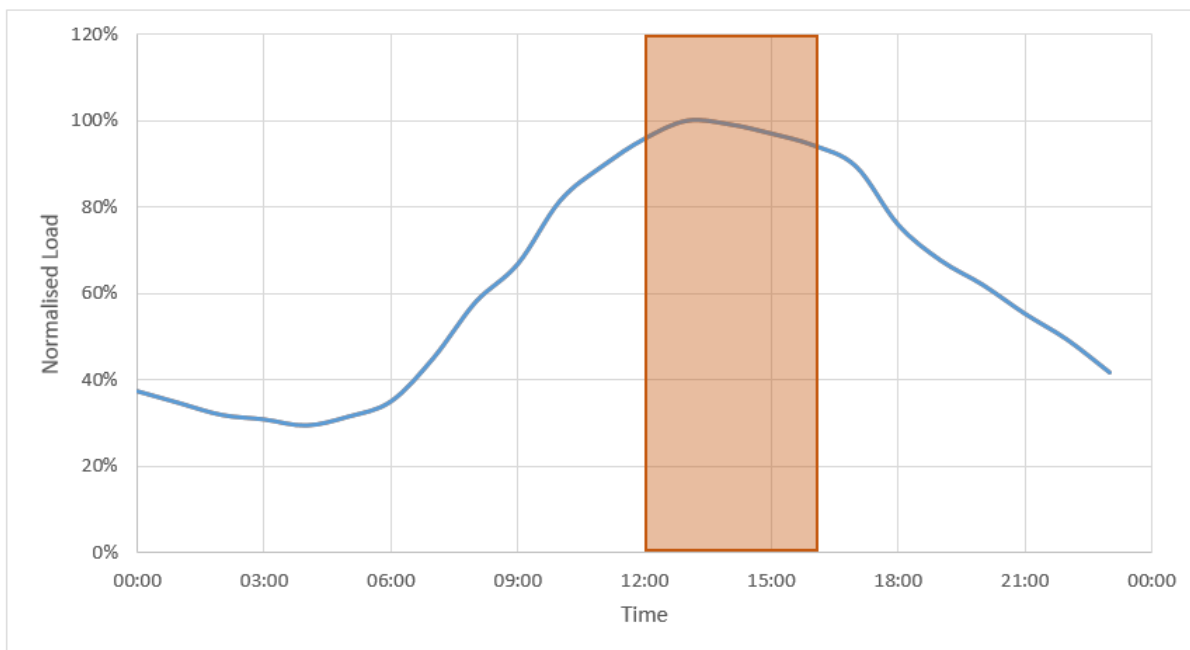


Figure 3: Typical load profile of OE14 feeder on a high demand day

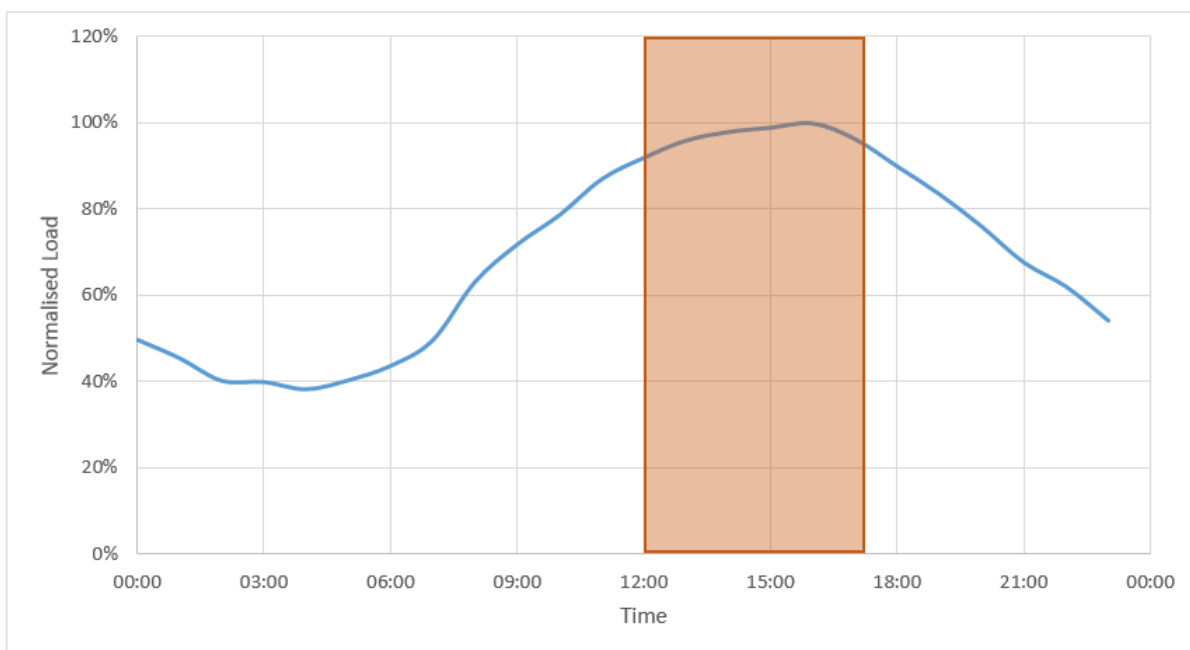
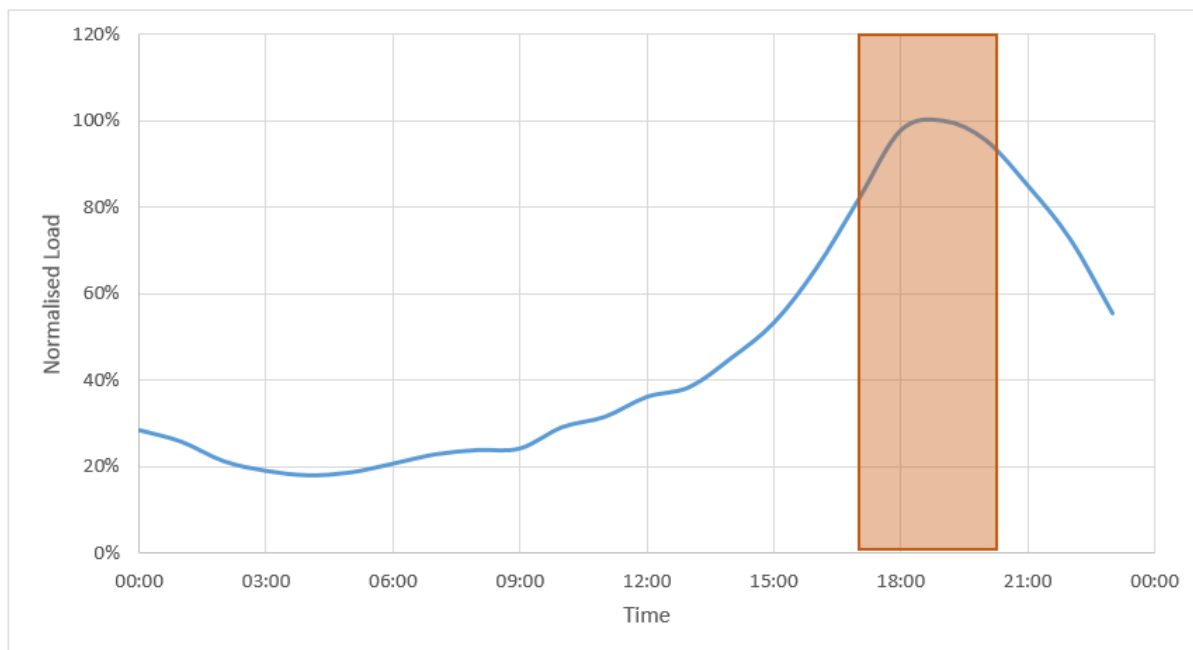




Figure 4: Typical load profile of OR35 feeder on a high demand day



The estimated demand management requirements is summarised below.

Table 1: Summary of non-network support requirement.

Description		2021	2022	2023	2024
Expected energy at risk (MWh) ¹		0.91	1.39	2.47	5.06
Value Expected energy at risk (\$k) ¹		39	59	106	217
DM Required (MW)-Min ²	OAK22	0.15	0.30	0.45	0.60
DM Required (MW)-Max ³		0.75	0.85	1.00	1.10
DM Required (MW)-Min ¹	OR35	0.15	0.30	0.40	0.60
DM Required (MW)-Max ²		0.70	0.80	0.95	1.05
DM Required (MW)-Min ¹	OE14	0.10	0.15	0.30	0.35
DM Required (MW)-Max ²		0.45	0.50	0.60	0.65
Net DM Required (MW)-Min		0.40	0.75	1.15	1.55
Net DM Required (MW)-Max		1.90	2.15	2.55	2.80
Maximum annual deferment benefit (\$k)⁴		34	34	34	34

¹ Considers 30% energy at risk under a 1-in-10 year demand levels and 70% energy at risk under a 1-in-2 year demand levels.

² Demand reduction required to maintain residual risk at 2020 levels.

³ Demand reduction required to address all risk (i.e. comparable to the network solution).

⁴ Calculated based on an estimated cost of \$907k and a discount rate of 3.75%.



3.1. Data requirements from non-network service providers

Non-network service providers interested in providing submissions to alleviate the network constraints outlined should contact United Energy as soon as possible. A detailed proposal including the information listed below should be submitted by the requested date. Details required include:

- Name, address and contact details of the person making the submission.
- Name, address and contact details of the person responsible for non-network support (if different to above).
- A detailed description of services to be provided including:
 - Size (MW/MVA)
 - Location(s)
 - Frequency and duration
 - Type of action or technology proposed
 - Proposed dispatching arrangement
 - Availability and reliability performance details
 - Period of notice required to enable the non-network support
 - Proposed contract period and staging (if applicable)
 - Proposed timing for delivery (including timeline to plan and implement).
- High-level electrical layout of the proposed site (if applicable).
- Evidence and track record proving capability and previous experience in implementing and completion of projects of the same type as the proposal.
- Preliminary assessment of the proposal's impact on the network.
- Breakdown of lifecycle cost to providing the service, including:
 - Capital costs (if applicable)
 - Annual operating (i.e. set up and dispatch fees) and maintenance costs
 - Other costs (e.g. Availability, Project Establishment costs etc.).
- A method outlining measurement and quantification of the agreed service, including integration of the proposed solution with the United Energy network.
- A statement outlining that the non-network service provider is prepared to enter into a Network Support Agreement (NSA) with United Energy (subject to agreeing terms and conditions).
- Letters of support from partner organisations.
- Any special conditions to be included in an NSA with United Energy.

All proposals must satisfy the requirements of any applicable laws, rules and the requirements of any relevant regulatory authority. Any network reinforcement costs required to accommodate the non-network solution will typically be borne by the proponent of the non-network options.

For further details on United Energy's process for engaging and consulting with non-network service providers, and for investigating, developing, assessing and reporting on non-network options as alternatives to network augmentation, please refer to the United Energy Demand Side Engagement Document at the link below.

<https://www.unitedenergy.com.au/wp-content/uploads/2019/07/UE-PL-2202-Demand-Side-Engagement-Document.pdf>



4. Enquiries and submissions

Final written submissions from interested parties to address the network capacity constraints described in this document are due by close of business 11th March 2020. United Energy recommends engagement as early as possible in order to provide any further information required, or to enable us to assist in developing proposals.

All enquiries and submissions should be directed to the United Energy Manager Network Planning & Strategy at planning@ue.com.au.