



Demand Side Engagement Document

December 2021

Version 4.0

Document Version history

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3.0	5 December 2018	Updated to include changes to planning methodologies, website changes
3.1	23 January 2019	Updated RIT-D thresholds
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1 Introduction

1.1 Purpose of the document

Ausgrid's *Demand Side Engagement Document* (DSED) meets our obligations under Clause 5.13.1 of the National Electricity Rules setting out our strategy and processes for engaging with *non-network providers* and considering *non-network options* (demand management solutions). This document also includes information specified in Chapter 5, schedule 5.9 of the National Electricity Rules. The content in this document is set out in the following sections.

Section 2 outlines Ausgrid's demand side engagement strategy for engaging with interested parties including details on how they can stay informed about Ausgrid's demand management activities.

Section 3 is a description of Ausgrid's demand management assessment process for identifying, investigating and implementing demand management solutions as an alternative to network investment. It also contains information on what we require from interested parties to assess a demand management solution.

Section 4 provides information on how customers can connect embedded generation to the Ausgrid electricity network.

Section 5 contains information on the methodology used for determining avoided Transmission Use of System (TUOS) customer payments.

Section 6 is an example of how Ausgrid assesses potential non-network options.

Section 7 outlines how the sections in this document meet the relevant demand side engagement obligations under the National Electricity Rules.

1.2 Contacts

We welcome all comments or queries you may have in relation to the contents of this document. Enquiries regarding this document should be emailed to demandmanagement@ausgrid.com.au.

Or write to us at:

Manager Demand Management and Forecasting
Ausgrid
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Sydney NSW 2001

2 Demand Side Engagement Strategy

The objective of network demand management is to develop and implement solutions that offer credible alternatives to network asset investment and lead to lower costs for our customers.

To deliver this, we recognise that cost effective solutions can be developed by engaging effectively with non-network providers and a broad range of stakeholders including industry experts and customers.

The key components of our Demand Side Engagement Strategy include:

1. engaging with non-network providers regularly through various means (section 2.1) and providing information in an open, timely and transparent manner about non-network opportunities (section 2.2); and
2. considering non-network options through a robust and transparent demand management assessment process, as outlined in section 3. A worked example is included in section 6.

2.1 Engaging with our non-network providers

To remain informed about any potential demand management opportunities, or if you would like to inquire about any of our demand management projects, please sign up to Ausgrid's demand management engagement register and submit a 'Register for updates' form at www.ausgrid.com.au/Industry/Demand-Management/Demand-management-news.

Once registered you will receive:

- quarterly e-newsletters informing you about our demand management initiatives, research and industry news. Current and past e-newsletters can be found on our Demand Management News page at <https://www.ausgrid.com.au/Industry/Demand-Management/Demand-management-news>;
- emails about RIT-D projects and opportunities to submit comments and proposals during the consultation process (e.g., non-network option and planning assessment reports);
- email updates when a new Distribution and Transmission Annual Planning Report (DTAPR) or Demand Side Engagement Document (DSED) has been published;
- invitations to respond to Request For Information/Request For Proposals for participating in Ausgrid's demand management projects; and
- invitations to engage with Ausgrid in demand management stakeholder activities and events.

Note that the information you provide will not be used by Ausgrid for any other purpose than for informing registrants of demand management and planning information, as per Ausgrid's Privacy Policy which can be accessed at www.ausgrid.com.au/Ausgrid-Privacy-Policy.

For further questions regarding the register or any enquiries about demand management at Ausgrid, email us at demandmanagement@ausgrid.com.au.

2.2 Information about non-network opportunities

Ausgrid provides a wide range of information to assist non-network service providers to identify where demand management solutions can offer a viable alternative to, or form part of, an integrated network investment. These include the:

- annual Distribution and Transmission Annual Planning Report (DTAPR) at www.ausgrid.com.au/dtapr which details Ausgrid's planning process and investment plans for the next five years;
- online mapping of network limitations in the DTAPR; non-network options reports, notices and draft and final project assessment reports for individual network needs (e.g., Regulatory Investment Test for Distribution projects or similar) at www.ausgrid.com.au/ritd;
- non-network options reports, notices and draft and final project assessment reports for individual network needs (e.g., Regulatory Investment Test for Distribution projects or similar) at www.ausgrid.com.au/ritd; and
- demand management engagement register to receive quarterly online newsletters and email updates about Ausgrid's network planning and demand management activities at www.ausgrid.com.au/Industry/Demand-Management/Demand-management-news.

Distribution and Transmission Annual Planning Report

In addition to detailing Ausgrid's planning process and investment plans for the next five years, the DTAPR includes a description of the Ausgrid network, demand forecasts for the five year forward planning period, Ausgrid's reliability performance and other information describing network performance.

Publication of the DTAPR also includes data packs for Ausgrid's:

- substation and feeder capacity and demand forecast;
- asset retirement plans;
- system limitation report; and
- system limitation interval data (30 min).

A copy of the latest report, the associated data packs and a link to the online mapping of the limitations can be found at www.ausgrid.com.au/dtapr.

Project assessment reports

In order to achieve the best possible outcomes for our customers we engage and consult with all interested parties on network projects that are subject to a Regulatory Investment Test for Distribution (RIT-D). This test must be applied when we assess options for solutions for network needs where the preferred network option cost is above \$6 million.

Project assessment reports, including any non-network option reports or notices for projects subject to the RIT-D, and how you can make a submission are found at www.ausgrid.com.au/ritd.

For projects where the preferred network option cost is less than \$6 million, Ausgrid applies a similar but simplified process appropriate to the cost of the project. Where public consultation

forms part of the assessment, non-network option reports will also be published on Ausgrid's website. Please refer to www.ausgrid.com.au/dm.

3 Demand management process

3.1 What is demand management

When Ausgrid identifies a network limitation, non-network options are considered as an alternative to the preferred network option. The implementation of a non-network alternative is commonly referred to as demand management in that the solution has historically involved the reduction or modification of customer demand for grid supplied electricity. With rapidly developing alternatives such as advanced solar and battery inverter control, demand management solutions can now include support for voltage unbalance, power factor and harmonics management.

Demand management is an important part of efficient and sustainable network operations; and can help address a network need due to rising customer demand, aging network assets, voltage unbalance or other investment driver. Effective use of demand management reduces the cost to develop and maintain the network, resulting in lower electricity bills for all customers.

There are a wide range of demand management solutions available for use by electricity networks. Examples include:

- Energy efficiency (e.g., replacing lights with more efficient, lower wattage options);
- Demand response (e.g., operating appliances at lower power demand for short periods (e.g., air conditioner load control);
- Operation of embedded generators (including renewable generators);
- Energy storage (e.g., batteries);
- Power factor correction (a form of energy efficiency);
- Load shifting (shifting equipment use from peak to non-peak periods such as off-peak hot water);
- Converting the appliance energy source from electricity to an alternative (e.g., switching from electric to gas heating); and
- Voltage management (e.g., operation of customer inverters in voltage support modes).

3.2 Assessment process

When a review of a network limitation is initiated, a review of options that includes both network and non-network options is completed. The goal is to identify the solution which offers the highest net benefit and meets the required reliability standards. The solution may be:

- Modifications or additions to the existing network (i.e. network solution); and/or
- Support of the existing network by others (i.e. non-network or demand management solution).

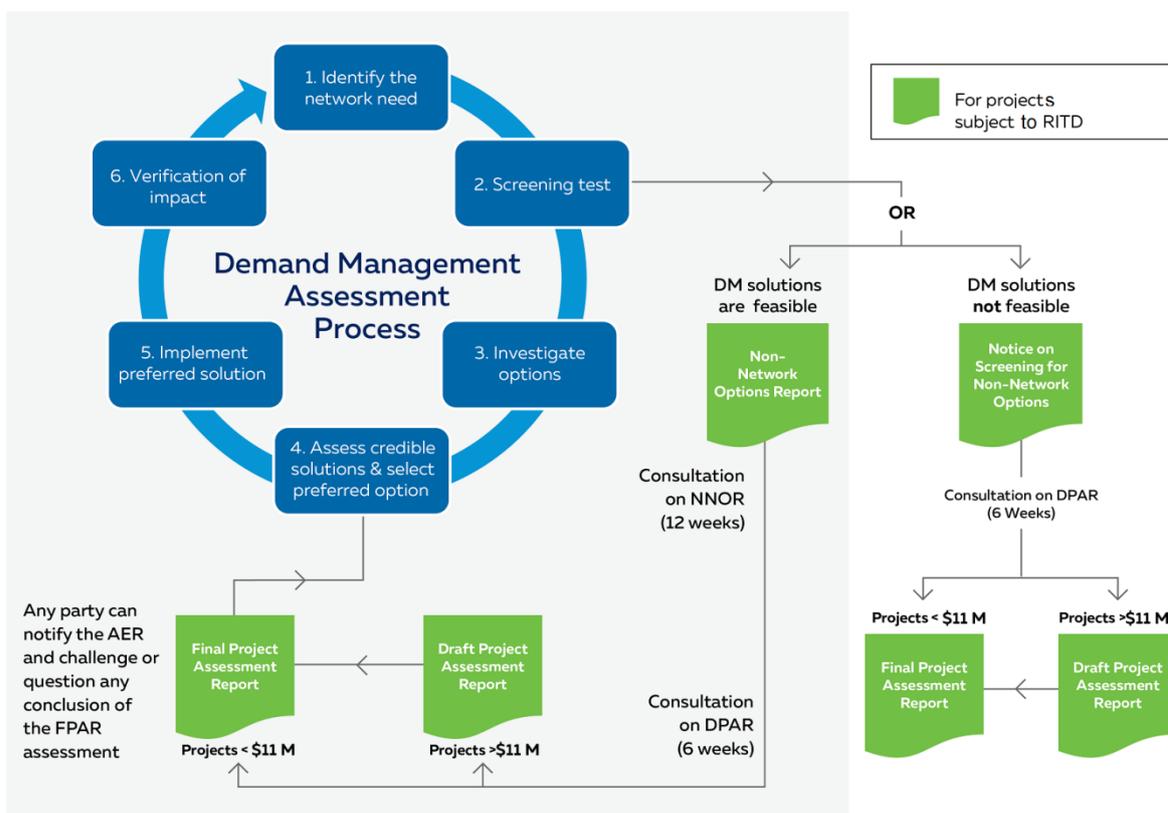
Ausgrid's planning process assesses network needs across 28 different network areas. Solution options are developed by area for all known network needs to allow for comprehensive solutions to address multiple needs.

To ensure a thorough investigation, Ausgrid consults with the community on larger projects about the network requirements and the potential non-network options available.

To determine the right balance, we apply the process depicted in Figure 1 below. For projects where the preferred network option cost is greater than \$6 million, the RIT-D process is followed. The green boxes denote the reports which are published as part of the RIT-D process.

For projects where the preferred network option cost is less than \$6 million, Ausgrid applies a similar but simplified process appropriate to the cost of the project.

Figure 1: DM Assessment process



The RIT-D process is a cost-benefit test that must be applied to all network investment projects where the most expensive credible option costs more than \$6 million. It must be applied by network distribution businesses when assessing the economic efficiency of different investment options in order to select the best option available to meet their network's needs. This helps to promote better consistency, transparency and predictability in our planning processes and follows the NER rules under Chapter 5.

3.2.1 Stage 1 - Identify network needs

Ausgrid's network investment needs are planned over a 5+ year time frame and are outlined in our Distribution and Transmission Annual Planning Report (DTAPR). It includes the planning activities associated with the replacement and restoration of sub-transmission and distribution

assets on our network. Please refer to the latest DTAPR for details on Ausgrid's planning process.

The DTAPR is published in December of each year. Interested parties registered with Ausgrid's Demand Management Engagement Register will be notified by email when the DTAPR is published. A copy of the latest report, the associated data packs and a link to the online mapping of the limitations can be found at www.ausgrid.com.au/dtapr.

The DTAPR and associated data packs or online mapping of limitations will typically constitute the first publication of information associated with forecast network limitations. The initiation of the RIT-D process (or similar for smaller projects) will follow publication in the DTAPR closer to the forecast need date. The DTAPR includes information about the forecast publication dates for the RIT-D process.

Note that network need dates may change due to a change in demand forecasts or other new information. Ausgrid will update project timings annually in the DTAPR at a minimum, with registered parties notified of any changes where solution development lead time is affected.

3.2.2 Stage 2 – Demand management screening test

Stage 2 of the process is a screening test in which a desktop study is carried out to determine whether demand management solutions could potentially provide a technically and economically feasible option to resolving the issue. This activity occurs in parallel with the development of network options to address the need.

We assess the network need and identify the characteristics of the demand management solution that would be required in order to make the option effective. The demand management solution must:

- address the identified network need (i.e. can achieve the required energy/demand reduction or voltage management);
- be economically viable (i.e. preliminary cost estimates indicate the solution offers a competitive alternative to the network option); and
- is deliverable within the required timeframe to resolve the identified need.

The cost and the impact (i.e. energy/demand reduction, voltage control) of possible demand management options are estimated based on current available knowledge and experience from past projects, past submissions from non-network providers and/or learnings from innovation trial projects. The costs and impacts are compared against a demand management budget derived from costs and benefits for the preferred network solution. This assessment is based upon a comparison of the net benefits for the preferred network option and possible non-network options.

If the screening test concludes that a non-network solution may offer a net benefit that is, at minimum, competitive with a network solution, we will publish a Non-Network Options Report (NNOR) on our website for RIT-D projects. For smaller projects not subject to the RIT-D, we will implement a consultation process that is appropriate to the cost and available funds for the project.

If the screening notice concludes that no demand management options are considered cost efficient, we will publish a Notice on Screening for Non-network Options (NNNO) on our website for RIT-D projects. The NNNO explains why we have concluded that non-network options do not offer a viable and efficient solution.

Where a NNNO is published, Ausgrid will publish the corresponding Project Assessment Report(s) as part of the RIT-D process. For projects where a credible option has an estimated cost greater than \$11 million, a Draft Project Assessment Report (DPAR) will be published, followed by a 6 week consultation period and then a Final Project Assessment Report (FPAR).

For projects where a credible option has an estimated cost of between \$6 million and \$11 million, a Final Project Assessment Report (FPAR) will be published.

Opportunities are available for interested parties to make a submission or dispute Ausgrid's screening notice or Project Assessment Report(s).

All documents are published on Ausgrid's website found at www.ausgrid.com.au/ritd.

3.2.3 Stage 3 – Investigate demand management options

Where the screening test finds that non-network options might offer an efficient alternative solution, an investigation of possible demand management options is initiated. For RIT-D eligible projects, a Non-Network Options Report is published. This report describes the network need and presents as much information about the project as possible to help proponents understand the technical requirements that a demand management solution would need to deliver in order to address the network need.

At a minimum, the Non-Network Options Report will include:

- A description of the identified network need;
- The assumptions used in identifying the need;
- The technical characteristics of the identified need including the size, location and time period required;
- A map clearly identifying the geographical boundaries of the area where demand management options offer value;
- An identification of any variability in demand management effectiveness (where appropriate);
- A description of the potential credible network and demand management solutions;
- The electricity demand profile data for the need;
- Time and duration of the required energy/demand reduction or voltage management;
- The deferral value for the identified need; and
- The likely characteristics of suitable demand management options.

Those who are registered on Ausgrid's Demand Management Engagement Register will be notified by email when a Non-Network Options Report has been published on the Ausgrid website and will be invited to provide feedback or submit proposals.

For smaller projects not subject to the RIT-D, we may provide a subset of this information appropriate to the cost and available funds for the project.

Non-network providers who wish to submit a proposal in response to a Non-Network Options Report will need to include, at a minimum, the following information in their submissions:

- Contact details of the company or person making the submission;
- Information about the proponent and key personnel including evidence that demonstrates their past experience and ability to implement the solution proposed;
- Size, type and location of each solution/technology proposed;
- A description of the proposed operation and impacts (e.g. demand/energy/voltage management) for each solution/technology;
- The required payments from Ausgrid for the proposed solutions, including payment structures;
- The longevity of any permanent reductions (e.g. energy efficiency solutions);
- The estimated level of additional activity beyond business as usual; and
- Lead time required to implement these measures and any period of notice required (e.g. day ahead or day of notice for load shedding).

Note that Ausgrid may request additional information if deemed appropriate depending on the particular circumstances of the potential non-network opportunity.

We welcome all interested parties to email their submission proposals on a Non-Network Options Reports or send their enquiries relating to our investigations to Ausgrid at demandmanagement@ausgrid.com.au.

Where further information beyond that provided in the Non-Network Options Report is requested by a proponent and the information is available, can be provided and is a reasonable request; Ausgrid will publish the information as an addendum to the Non-Network Options Report and notify all those registered on the Demand Management Engagement Register.

Proponents are encouraged to clarify requirements with Ausgrid to ensure that proposals contain sufficient information to reach a considered decision as to the viability of a demand management solution. Examples of proposals that are generally not considered to be sufficient are those which offer:

- Consultancy services to investigate an option further;
- Limited information on the pricing, impact or location of the proposed solution; or
- Present unproven technologies with no evidence base to back claims. Note that Ausgrid does consider technologies that are not yet proven for innovation trial projects, however, where there is a network need, our preference is to first and foremost consider technologies that have an established evidence base in terms of their efficacy.

Once we receive all submissions from non-network providers, we review each option and rank them according to their impact, cost and effectiveness. All options are assessed against the following evaluation criteria:

- Impact (e.g. demand/energy, kVA, MWh);
- Cost (NPV, \$/kVA, \$/MWh);
- Time of day/seasonality demand/energy reduction available;
- Timeframe for implementation;
- Dependency on customer participation and acceptance;

- Reliability/permanence of demand/energy reduction; and
- Risks associated with the proposal.

An option is commercially and technically feasible where its estimated costs are comparable to (or less than) other credible options that address the identified need. One exception includes where the credible option(s) is/are likely to deliver materially higher market benefits. In such circumstances, the option may be commercially feasible despite the higher expected cost.

Where the individual proposals do not fully meet the identified network requirement, Ausgrid may consider a combination of proposals to address the need or maximise benefits.

Refer to Section 6 for an example of how we assess potential non-network options.

3.2.4 Stage 4 – Select the preferred demand management option

After the assessment is complete, based on the ranking of options we decide whether one or a combination of proposed non-network options could form a credible single solution, or a significant portion of a credible solution to resolve the identified network need. We also consider whether combining any of the non-network solutions with a network driven solution could provide a preferable economic benefit.

Whether non-network options are found to be viable or not, Ausgrid will then publish the outcomes in the corresponding Project Assessment Report(s) as part of the RIT-D process. For projects where a credible option has an estimated cost greater than \$11 million, a Draft Project Assessment Report will be published, followed by a 6 week consultation period and then a Final Project Assessment Report. For projects where a credible option has an estimated cost less than \$11 million, a Final Project Assessment Report will be published.

The Project Assessment Report(s) identify the preferred option with supporting information to demonstrate that it provides the highest net-present value of market benefits via a cost-benefit assessment of all credible options. The reports will include:

- A description of the network constraint and what the need requirement is;
- A summary of the submissions received on any Non-Network Options Report;
- A description of the credible options that were considered in the RIT-D assessment;
- The methods used in quantifying each class of market benefit;
- The costs and classes of market benefits for each of the credible options;
- Reasons why differences in changes in voluntary load curtailment, costs to other parties, option value and timing of other distribution investment do not apply to a credible option;
- The results of NPV analysis of each credible option and accompanying explanatory statements regarding the results;
- Identification of the preferred option; and
- Information to enable stakeholders to provide their feedback in consideration of the preferred option.

For smaller projects not subject to the RIT-D, we will publish outcomes in a manner that is appropriate to the cost and available funds for the project.

Those who are registered on Ausgrid's Demand Management Engagement Register will be notified by email when Project Assessment Report(s) have been published on the Ausgrid website and will be invited to provide feedback.

All documents are published on Ausgrid's website at www.ausgrid.com.au/ritd.

3.2.5 Stage 5 – Implementation of demand management solution

Where a non-network solution has been selected to form part of the solution, at the completion of the final project assessment process, Ausgrid will commence procurement processes. These processes will contract for the preferred non-network solution while ensuring both probity and prudent purchasing practice. This may include negotiating agreements with the selected demand management service provider(s) based on the submission from the service provider as part of the consultation process, other tenders or invitations to bid, or internal project development.

3.2.6 Stage 6 – Verification of impact

During the period of implementation of the demand management project, Ausgrid will regularly measure and verify the contracted energy/demand savings to ensure contract terms are met and to help manage risk.

Following completion of the project, further measurement and verification studies of the delivery performance will be undertaken to ensure lessons learned can be applied to future demand management assessments and projects.

3.3 Payments for Network Support

Payments for network support will be negotiated on commercial terms to achieve the lowest cost outcome for Ausgrid's customers. The values identified in a Non-Network Options Report form an upper bound. In determining this upper bound, Ausgrid will include the value of the deferred capital expenditure, any reduction in estimated unserved energy, the impact on operation and maintenance costs and the extent the non-network option meets the network need requirements.

Service levels, performance targets and milestones will be negotiated in any agreement to ensure that delivery risks are properly managed. Payment levels for demand management solution will consider:

- The outcome of the net present benefit assessment;
- The magnitude of the demand/energy reduction;
- The duration and number of occurrences of expected demand/energy reductions;
- The reliability/permanence of the demand management solution;
- The co-incidence between the solution, time and season; and
- The proportion of the solution to the demand/energy reduction requirement.

Consultation and information about specific incentive payments may be provided as part of the Non-Network Options Report or be released as part of the implementation of a selected demand management solution.

4 Embedded generation connection process

Embedded generators are equipment that generate electricity and are connected to Ausgrid's distribution network. In some cases a generator may export generated electricity back into our network. Standby generation equipment is used as an alternative source of supply in the event of a power outage or to help manage the demand for electricity on our network, usually during peak energy use times.

There is a wide range of generating technologies available, including:

- Renewable systems including, solar photovoltaic (pv) panels, wind turbines, and hydro generation;
- Battery storage systems that export electricity, including vehicle to grid (V2G) systems;
- Combustion machine e.g. diesel generators; and
- Co and Tri-generation

If you wish to connect an embedded generator to Ausgrid's network, you must submit a connection application. You need to submit a connection application even if you are installing a standby generator or a generator that will not export electricity back into the network.

To apply to connect or alter the connection for an embedded generation unit, Ausgrid requires information about your proposed generator and connection.

4.1 Lodging a connection application for an embedded generator

We recommend you engage a suitably qualified electrical professional to assist you with your application, which you can do through our website. The type of application form that will be applicable to you will depend on the size and type of your proposed system and how you intend to use it. Each form has an accompanying guideline or information pack that explains how to complete the form and the process involved to connect. You can find detailed information about the connection process at <https://www.ausgrid.com.au/Connections/solar-battery-and-embedded-generation>.

There are legal, technical and safety requirements that must be met before a generator can be connected to provide for safety of people, equipment and places and to maintain network reliability and performance. Requirements for generators are set out in Ausgrid network standards, Australian standards, NSW Safety Installation Rules and state and national legislation, in particular the National Electricity Rules.

Once we have received your application we will assess it to make sure there are no safety, network reliability or performance risk and that it meets all the relevant regulatory requirements which include our network standards, Australian standards, NSW Safety Installation Rules and state and national legislation, in particular the National Electricity Rules.

4.2 Negotiating connection agreements for embedded generator connections

Once we have assessed the application, we will send you a connection offer, which includes costs, requirements and timeframes.

For customers wishing to connect a micro embedded generator system (inverter energy systems less than or equal to 200kW), a model standing offer (Basic Connection Services – Micro EG Connections) is available. Offers for all other types of embedded generator system are by negotiation.

Customers are entitled to negotiate a connection offer even if an appropriate model standing offer is available. The negotiation process is described in Ausgrid's Connection Negotiation Process at www.ausgrid.com.au/-/media/Documents/Connections/Offers/Ausgrid-Connection-Negotiation-Process which can also be found in the embedded generator information packs.

Customers may choose to expedite their connection application where an applicable model standing offer for basic or standard services is available. The expedited connection process allows a customer to save time by skipping the offer and acceptance steps to a connection contract. However, it is not possible to expedite a negotiated connection contract.

4.3 Charges associated with connection agreements for embedded generators

Ausgrid will charge you a fee to cover our reasonable expenses incurred in assessing the connection application and making a connection offer. In addition, you may be required to pay for some connections services that in accordance with our connection policy. All of our fees are set by the AER.

5 Avoided Transmission Use of System charges

Avoided Transmission Use of System (ATUOS) payments recognise that energy supplied to Ausgrid's network by an embedded generator would have otherwise been supplied from the state's transmission network. Under the National Electricity Rules, owners or operators of eligible embedded generators can receive ATUOS payments from Ausgrid.

Ausgrid connects to the TransGrid transmission network at multiple connection points. TransGrid, as a regulated Transmission Network Service Provider, recovers its revenue from directly connected customers and Distribution Network Service Providers connected to its network. In accordance with the connection agreement with TransGrid, Ausgrid is required to pay transmission use of system (TUOS) charges to TransGrid.

Further details on the calculation methodology for Avoided TUOS can be found on Ausgrid's website in Appendix F of our [ES7 Network Price Guide](https://www.ausgrid.com.au/Industry/Regulation/Network-prices) found at <https://www.ausgrid.com.au/Industry/Regulation/Network-prices>.

6 Example: Non-Network Options Assessment

The following is an example of a possible 11kV switchgear retirement project. While the description of the need and DM requirements are similar to other future network investments, the values used are approximated to reflect an example of a potentially viable DM project. Similarly, the described non-network solutions are estimates only and are presented to illustrate how Ausgrid assesses non-network alternatives.

6.1 Network need

Ausgrid has identified a need to replace or retire the 11kV switchgear at a zone substation. The main issue for the switchgear relates to asset condition and safety concerns stemming from obsolete compound filled switchgear that if left unaddressed are likely to become less reliable, which could expose customers in the load area to a supply risk that exceeds allowable levels under the applicable reliability standards. Ausgrid considers that reliability correction action is required for the zone substation to comply with its electricity distribution license reliability and performance standards.

The preferred network option involves retirement of the Group 1 switchgear and transfer of the load served to an adjacent zone substation and related transformer relocation works. Ausgrid estimates undiscounted capital costs for the preferred network solution are \$12.0 million. The need year is 2023/24.

6.2 DM Requirements

A viable demand management solution must be capable of reducing the load on the zone substation and adjacent feeders sufficiently to retain supply to customers over the required time for restoration of supply in the event of an unplanned equipment failure. This reduction in supply can be permanent or temporary but must:

- Offer support throughout summer from 1 November to 31 March when there is the possibility of a shortfall in supply;
- Align with the load profiles after emergency load transfer; and
- Be cost effective in comparison with the preferred network alternative.

Due to the scale of the shortfall in electricity supply, we consider that a combination of permanent and temporary demand reductions would offer the most plausible scenario for a possible cost-effective non-network alternative.

A detailed assessment of the load profile for the zone substation shows that the shortfall in supply after emergency load transfers has been implemented is as shown in the table below.

Year	Days/year	Hours/year	Demand Shortfall (MVA)	Energy shortfall (MVAh)
2023/24	47	305	18.1	1,737
2024/25	58	367	19.4	2,171
2025/26	68	444	20.7	2,699

6.3 Summary of proposals

In the proposed example, we are assuming a total of six proposals have been received as part of the tender process:

1. A1 Energy Services Pty Ltd - power factor correction solution
2. B2 Energy Management Solutions Ltd – demand response program
3. C3 Energy Solutions Provider Pty Ltd – commercial energy efficiency reductions
4. D4 Switched On Solutions Pty Ltd – commercial energy efficiency lighting program
5. E5 DM Energy Solutions Pty Ltd – demand response program
6. F6 Solar Pty Ltd – rooftop solar company

The following table summarises some of the critical information that would be assessed as part of our evaluation of the proposed options. Energy efficiency and demand response solutions are summarised separately as they may address different components of the energy and demand shortfall.

Proponent	Demand reduction (MVA)	Claimed Energy reduction (MVAh)	2023/24 Coincident energy reduction (MVAh)	Total cost to Ausgrid (\$)	Unit cost to Ausgrid to 2023/24 (\$/MVAh)	Time for Implementation
Energy efficiency solutions (permanent, non-dispatchable)						
A1	0.8 MVA	N/A	233	\$17,500	\$74/MVAh	1 year
B2	1.0 MVA	2,500	239	\$330,000	\$1,381/MVAh	2 years
C3	4.0 MVA	10,000	1,306	\$780,000	\$597/MVAh	2 years
D4	4.0 MVA	5,600	734	\$820,000	\$1,117/MVAh	2 years
Demand response solutions (temporary, dispatchable – 1 year)						
E5	3.0 MVA	450	450	\$320,000	\$107/kVA/yr	1 year
F6	8.0 MVA	1,200	1,200	\$715,000	\$89/kVA/yr	2 years
Demand response solutions (temporary, dispatchable – 2 years)						
E5	3.0 MVA	450	450	\$410,000	\$68/kVA/yr	1 year
F6	8.0 MVA	1,200	1,200	\$1,040,000	\$65/kVA/yr	2 years
Demand response solutions (temporary, dispatchable – 3 years)						
E5	3.0 MVA	450	450	\$500,000	\$56/kVA/yr	1 year
F6	8.0 MVA	1,200	1,200	\$1,365,000	\$57/kVA/yr	2 years

6.4 Assessment of proposals

Proposals are assessed for commercial and technical viability and whether the solution can be delivered to meet the required schedule. Proposals found viable are then ranked against key unit rate measures to determine merit order. From the merit order, a portfolio of individual proposals is constructed so as to achieve an alternative DM program solution. There may be multiple portfolios constructed. From the summary above, a possible portfolio for a 3 year deferral of the network investment would be as follows:

Example portfolio

Proponent	Demand reduction (MVA)	Total cost to Ausgrid (\$m)	Total cost to Ausgrid (cumulative \$m)
A1	0.8 MVA	\$0.02m	\$0.02m
C3	4.0 MVA	\$0.78m	\$0.80m
D4	4.0 MVA	\$0.82m	\$1.62m
F6	8.0 MVA	\$1.04m	\$2.66m

The various portfolios are then assessed to determine the total costs, benefits (including estimated unserved energy impact) and net benefit for each option for a range of deferral periods. Each option is then ranked against the 'do-nothing' and preferred network options to determine the preferred solution. In the example below, a 3 year deferral using the Portfolio 2 demand management solution is the preferred option.

Option	PV of costs	PV of benefits	NPV	NPV Ranking
Do nothing	\$0	\$0	\$0	5
Preferred network option	\$7.4m	\$9.9m	\$2.5m	2
Portfolio 1 – 1 year deferral	\$7.4m	\$9.7m	\$2.3m	4
Portfolio 2 – 2 year deferral	\$7.2m	\$9.6m	\$2.4m	3
Portfolio 2 – 3 year deferral	\$6.5m	\$9.5m	\$2.7m	1

Total benefits include the reduction in estimated unserved energy (EUE), the difference in present value cost achieved due to the deferral of the network capex project (including the difference in terminal value) and other market benefits.

Total costs are the net present value of the network and non-network costs, including any discounted future network costs due to the delayed delivery of the network solution (option value).

7 Relevant National Electricity Rules obligations

Sub-clause	Demand side engagement obligations (Chapter 5, Clause 5.13.1)	Document section
(e)	Each <i>Distribution Network Service Provider</i> must develop a strategy for: (1) engaging with <i>non-network providers</i> ; and (2) considering <i>non-network options</i> .	2,3
(f)	A <i>Distribution Network Service Provider</i> must engage with <i>non-network providers</i> and consider <i>non-network options</i> for addressing system limitations in accordance with its <i>demand side engagement strategy</i> .	2,3
(g)	A <i>Distribution Network Service Provider</i> must document its <i>demand side engagement strategy</i> in a <i>demand side engagement document</i> which must be <i>published</i> by no later than 31 August 2013.	2,3
(h)	A <i>Distribution Network Service Provider</i> must include the information specified in schedule 5.9 in its <i>demand side engagement document</i> .	2-6
(i)	A <i>Distribution Network Service Provider</i> must review and <i>publish</i> a revised <i>demand side engagement document</i> at least once every three years.	version
(j)	A <i>Distribution Network Service Provider</i> must establish and maintain a facility by which parties can register their interest in being notified of developments relating to <i>distribution network</i> planning and expansion. A <i>Distribution Network Service Provider</i> must have in place a facility under this paragraph (j) no later than the date of publication of the <i>Distribution Network Service Provider's demand side engagement document</i> under paragraph (g).	2.1
Sub-clause	Demand side engagement document (Chapter 5, Schedule 5.9)	Document section
(a)	A description of how the <i>Distribution Network Service Provider</i> will investigate, develop, assess and report on potential <i>non-network options</i>	3
(b)	A description of the <i>Distribution Network Service Provider's</i> process to engage and consult with potential non-network providers to determine their level of interest and ability to participate in the development process for potential <i>non-network options</i>	3
(c)	An outline of the process followed by the <i>Distribution Network Service Provider</i> when negotiating with non-network providers to further develop a potential <i>non-network option</i>	3
(d)	An outline of the information a non-network provider is to include in a non-network proposal, including, where possible, an example of a best practice non-network proposal	3
(e)	An outline of the criteria that will be applied by the <i>Distribution Network Service Provider</i> in evaluating non-network proposals	3
(f)	An outline of the principles that the <i>Distribution Network Service Provider</i> considers in developing the payment levels for <i>non-network options</i>	3
(g)	A reference to any applicable incentive payment schemes for the implementation of <i>non-network options</i> and whether any specific criteria is applied by the <i>Distribution Network Service Provider</i> in its application and assessment of the scheme	3
(h)	The methodology to be used for determining <i>avoided Customer TUOS charges</i> , in accordance with clauses 5.4AA and 5.5	5
(i)	A summary of the factors the <i>Distribution Network Service Provider</i> takes into account when negotiating connection agreements with Embedded Generators	4.2

(j)	The process used, and a summary of any specific regulatory requirements, for setting charges and the terms and conditions of <i>connection agreements for embedded generating units</i>	4.3
(k)	The process for lodging an <i>application to connect</i> for an <i>embedded generating unit</i> and the factors taken into account by the <i>Distribution Network Service Provider</i> when assessing such applications	4.1
(l)	Worked examples to support the description of how the <i>Distribution Network Service Provider</i> will assess potential <i>non-network options</i> in accordance with paragraph (a)	6
(m)	A hyperlink to any relevant, publicly available information produced by the <i>Distribution Network Service Provider</i>	2
(n)	A description of how parties may be listed on the demand side engagement register	2
(o)	The <i>Distribution Network Service Provider's</i> contact details	1 & 2