



ES1

Customer Connection Information

JULY 2011



SCOPE

This publication provides general information to assist with connection to Ausgrid's network.

WARNING

It is the responsibility of the user of this document to ensure that only the current version is being used.

Ausgrid may amend this document at any time.

DOCUMENT AND AMENDMENT HISTORY

Issue No.	Date	Approved by	Summary of Changes
1	December 1996	M - NAP	
2	August 1999	M - NAP	
3	March 2005	GM - CS	Part A updated for current practice
4	January 2007	M – P & P	Changes associated with the deletion of Part B
5	June 2011	M – IP&C	Changes associated with the end of the NSW Solar Bonus Scheme and re branding

ISSN 1032-7215

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All correspondence should be directed to:

Executive General Manager – Distribution Operations and Reliability

Ausgrid

GPO Box 4009

SYDNEY NSW 2001

Customer connection information area of supply

Ausgrid supplies electricity to customers in the following Local Government areas:

Ashfield	Drummoyne	Lane Cove	North Sydney	South Sydney
Auburn	Gosford	Leichhardt	Pittwater	Strathfield
Bankstown	Hornsby	Maitland	Port Stephens	Sutherland
Botany	Hunters Hill	Manly	Randwick	Sydney
Burwood	Hurstville	Marrickville	Rockdale	Warringah
Canterbury	Kogarah	Mosman	Ryde	Waverley
Cessnock	Ku-ring-gai	Muswellbrook	Scone	Willoughby
Concord	Lake Macquarie	Newcastle	Singleton	Woollahra
				Wyong



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1 Introduction

This publication outlines the procedures and conditions associated with connecting or upgrading the connection of private electrical installations to Ausgrid's distribution network. The information is relevant to Ausgrid's existing and new network customers, their electrical consultants, contractors and accredited service providers.

The Service and Installation Rules of NSW, published by the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS), must also be read in conjunction with this publication.

Further related connection requirements are contained in the following Ausgrid publications:

- Standard Form Customer Connection Contract.
- Electricity Network Operating Standard (ENOS)
- Electricity Supply Standards (ES Series)
 - ES 3 Part A – Metering Installations
 - ES 3 Part B – Technical Specifications for Metering Installations
 - ES 4 – Service Provider Authorisation
 - ES 5 – Charges for Network Miscellaneous & Monopoly Services
 - ES 8 – Capital Contribution and Recoverable Work Guidelines
 - ES 9 – Agreement for Supply to Developments
 - ES 10 – Requirements for Supply to Developments
- NCP 7 – Application of Network Use of System Charges
- Network Standards (NS series)
- Customer Installation Advice (CIA)
- Network Standard Advice (NSA)
- Customer Installation Safety Plan
- Network Management Plan (incorporating the Asset Management Plan and the Safety and Operating Plan).

A brief description of some of these publications can be found in Section 3.

Copies of the Ausgrid publications listed above are available from our Customer Operations regional offices (The location of these offices is listed in clause 2.1). A charge will apply for the provision of printed copies of Ausgrid's Network Standards. Other Ausgrid publications listed above are available free of charge. Copies of all Ausgrid publications in the list can also be downloaded in PDF Acrobat Reader format from Ausgrid's website **www.ausgrid.com.au**

Ausgrid's Standard Form Customer Connection Contract defines the legal relationship between Ausgrid and its network connected customers, as required by the Electricity Supply (General) Regulation. The contract automatically applies when you become a network customer in Ausgrid's network area. Electricity energy is supplied to customers under the default Standard Form Customer Supply Contract. The arrangements set up under the National Electricity Market (NEM) allow customers to negotiate the terms of either contract. Ausgrid's website www.ausgrid.com.au contains further details about energy supply contracts.

2 Customer Connection Inquiries

2.1 Network connection inquiries

Inquiries can be made at an Ausgrid Customer Operations office serving the following localities:

TUGGERAH

Connections in the NSW Central Coast area.

Office Location:	14 Pioneer Ave Tuggerah
Postal Address:	PO Box 3744 Tuggerah NSW 2259
Office Hours	7.30 am to 4 pm (Monday to Friday).

Contact Details

Customer connection inquiries	(02) 4399 8000
General Facsimile (not forms)	(02) 4399 8001
Technical Enquiries	ccsii@ausgrid.com.au
Facsimile for all AFCs, CCEW's and NOSW's	(02) 4399 8007
Local Call	1300 662 089
Email (electronic or scanned forms)	ea.datanorth@ausgrid.com.au

HORNSBY

Connections between the southern side of the Hawkesbury River to the northern side of Sydney Harbour and the Parramatta River.

Office Location:	Building 2, 51-59 Bridge Rd near Sherbrook Rd, Hornsby
Postal Address:	GPO Box 4009 Sydney NSW 2001
Office Hours	8.00 am to 4.30 pm (Monday to Friday).

Contact Details

Customer inquiries	(02) 9477 8201(opt 3)
General Facsimile (not forms)	(02) 9477 8207
Technical Enquiries (email) or	seniorsHORNSBY@ausgrid.com.au
Technical Enquiries (phone)	(02) 94778205
Clerical Enquiries (email) or	HRO@ausgrid.com.au
Clerical Enquiries (phone)	(02) 94778201
Main Switchboard Drawings	NorthMSB@ausgrid.com.au
Facsimile for all AFCs, CCEWs and NOSWs	(02) 4399 8007
Local Call	1300 662 089
Email (electronic or scanned forms)	ea.datanorth@ausgrid.com.au

MUSWELLBROOK

Connections in the Muswellbrook, Scone, Merriwa, Singleton and Branxton areas.

Local Government Areas (LGA) Upper Hunter, Muswellbrook, Singleton

Office Location:	41 Thomas Mitchell Drive, MUSWELLBROOK.
Postal Address:	PO Box 196 Muswellbrook 2333
Office Hours	7.00 am to 3.30 pm (Monday to Friday)

Contact Details

Customer connection inquiries	(02) 6542 9017
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General Facsimile (AFC's, CCEW's and NOSW's)	(02) 6542 9037
Technical Enquiries	datamuswellbrook@ausgrid.com.au
Facsimile for all AFCs, CCEWs and NOSWs	(02) 4399 8007
Email (electronic or scanned forms)	datamuswellbrook@ausgrid.com.au

OATLEY

Connections south of Sydney Harbor and Parramatta River.

Office Location:	33-45 Judd Street Oatley. (Building No.1) South western corner of the ground floor of the Administration Building.
Postal Address:	GPO Box 4009 Sydney NSW 2001
Office Hours	7:30 am to 4pm (Monday to Friday).

Contact Details

Customer connection inquiries	(02) 9585 5774 (opt 2)
Customer Operations General	(02) 9585 5998
Technical	(02) 9585 5996
General Facsimile (not forms)	(02) 9585 5776
Facsimile for all AFCs, CCEWs and NOSWs	(02) 8001 3440
Local Call	1300 662 089
Email (electronic or scanned forms)	ea.datanorth@ausgrid.com.au

WALLSEND

Connections in the Cessnock, Lake Macquarie,
Newcastle, Maitland and Port Stephens areas.

Office Location:	Building 5, 78 Abbott St Wallsend
Postal Address:	PO Box 487 Newcastle NSW 2300
Office Hours	7:30 am to 4pm (Monday to Friday).

Contact Details

Customer connection inquiries	(02) 40356000
Email (Technical Enquiries)	installw@ausgrid.com.au
General Facsimile (not forms)	(02) 49519934
Facsimile for all AFCs, CCEWs and NOSWs	(02) 4399 8007
Local Call	1300 662 089
Email (electronic or scanned forms)	ea.datanorth@ausgrid.com.au

GENERAL

Alternatively telephone inquiries may also be made to these offices through Ausgrid's Customer Contact Centre on:

Account inquires	} 13 15 35
Connection of supply	
Disconnection of supply	

Calls to this number can be made for the cost of a local call in NSW.

2.2 Electricity accounts and other inquiries

When telephoning in regard to an account, it will assist Ausgrid to answer your inquiry if you have a copy of your account statement at hand.

Residential inquiries	13 15 35
Business inquiries	13 13 67
Energy Quotes	
Residential and Business (contestable retail energy)	13 15 03
Large commercial and industrial (contestable retail energy)	1800 807 107
Street Lights Fault Reporting (free call)	1800 044 808
Electricity Emergency Service Line (24 hours) (Ausgrid's Network area)	13 13 88
Electricity Theft (free call)	1800 060 412

General correspondence may be sent to:

Ausgrid
GPO Box 4009
Sydney NSW 2001

3 General Connection Information

3.1 Contestability

The Electricity Supply Act and the associated Electricity Supply (General) Regulation require customers (owners of electrical installations and property developers etc) to fund the cost of the dedicated network assets necessary for the connection of an installation to the network. Customers have the choice of selecting an appropriately Accredited Service Provider (ASP) to carry out the customer funded works to Ausgrid's requirements and standards. The connection works funded by the customer is referred to as contestable work.

ASPs are individuals or companies who carry out contestable work under contractual arrangements made directly with customers. Ausgrid is accredited to carry out all contestable work and offers its services to customers.

The process of accreditation to perform contestable work is managed by the Department of Trade and Investment, Regional Infrastructure and Services. It is a condition of accreditation, when performing contestable work on or near Ausgrid's network, that the individual employees of the ASP must be authorised for the type of work involved by Ausgrid. Details of the Service Provider Authorisation process can be found in Ausgrid publication **ES4**.

As required by law, customers must ensure that licensed electrical contractors carry out their electrical installation work and appropriately authorised ASP's carry out their contestable connection work.

It is an electricity network operator's licence condition that Ausgrid ensures the process involved in contestable connection work is fair and equitable.

There are certain services, called monopoly services, associated with the contestable work that only Ausgrid can carry out. The Australian Energy Regulator (AER) regulates the fees charged for these services. Details of each of the monopoly services can be found in Ausgrid publication **ES5 – Charges for Network Miscellaneous and Monopoly Services**.

3.2 Requirements and conditions for connection

Customers are required to provide the facilities for the connection of their electrical installation to Ausgrid's distribution network.

The facilities must comply with Ausgrid's requirements and the *Service and Installation Rules of NSW*.

Relevant Ausgrid requirements and conditions are detailed in the following publications:

ENOS – Electricity Network Operating Standards

The aim of this publication is to:

- provide tips on how you can protect your electrical installation and your electrical equipment and appliances connected to our electricity network from the potential problems that unprotected equipment can suffer because of variations to electricity supplied through our network, and
- to help you understand the operating environment of our network and explain why the electricity supplied through it has particular characteristics.

ES 3 – Metering Installations (Part A and B)

This publication outlines Ausgrid's revenue metering requirements for electrical installation sites within the Ausgrid distribution area.

ES4 – Service Provider Authorisation

Written authorisation from Ausgrid is required by individuals working for ASP's to ensure they have an adequate knowledge of, and are competent in, the essential safety requirements for working on or near the network. These requirements are stipulated in the Ausgrid Electrical Safety Rules and Network Management Plan. ES4 provides details for ASP's seeking authorisation to carry out contestable work in Ausgrid's network area.

ES5 – Charges for Network Miscellaneous and Monopoly Services

The primary purpose of this publication is to detail the charges that will be applied by Ausgrid's network business for miscellaneous and monopoly services, which are associated with the connection of customers' premises to the network. The AER determines an exhaustive list of these services and establishes the associated charges. The charges for miscellaneous and monopoly services outlined are directly based on AER Final Determination for the period 2009-2014. Contestable works, which are also funded by the customer, are outlined in clause 3.1 of this document. Customers seeking quotations for contestable work from accredited service providers (ASPs) can do so on a commercial basis.

ES8 – Capital Contributions Guidelines

Customers may be required to fund some or all of the work necessary for the connection of their electrical installation to the network. Ausgrid may also fund some of the work. ES8 sets out the conditions under which customers or Ausgrid fund the connection costs and is based on the AER Final Determination for the period 2009-2014.

ES9 – Agreement for Electricity Supply to Developments

Depending upon the nature of the contestable work associated with a connection to the network, a customer or developer may be required to enter into an agreement with Ausgrid to ensure:

- the work is only performed by ASP's with current accreditation
- the work complies with relevant design and safety standards
- adequate indemnity is provided for Ausgrid
- Ausgrid is granted adequate property rights over its assets
- minimum lead times are adhered to
- a bond is provided guaranteeing the work for the warranty period.

ES10 – Conditions for Electricity Supply to Developments

This publication sets the general conditions that customers or developers may be required to meet to enable the connection of their electrical installation or commercial development to the network. Site specific conditions and arrangements, which supplement ES10, will be specified in individual correspondence and may be included in an ES9 agreement.

Network Management Plan

Ausgrid recognises how important it is to its customers, the community and other stake holders to provide a safe and reliable electricity supply of appropriate quality.

The objective of this plan is to provide a management framework that when used correctly, will ensure that Ausgrid's network provides an adequate, reliable and safe supply of electricity of appropriate quality.

Ausgrid is committed to ensuring the safe operation of its network and gives safety the highest priority over all other aspects of network management. Ausgrid also maintains close relationships with the electricity supply industry and its regulators to ensure the working environment is safe for staff, contractors and the wider community. The Network Management Plan incorporates four individual plans. These are:

- Network Safety and Reliability
- Customer Installation Safety
- Public Electrical Safety Awareness
- Bush Fire Risk Management

Customer Installation Safety Plan

This plan addresses the safety of electrical installation wiring and its safe connection to the network by:

- supporting the scheme of licensing electrical contractors
- monitoring compliance with relevant codes and regulations.

Customers are responsible for the maintenance of their installation including all poles and wires, to ensure the safety of persons and property and the prevention of bushfires. Customers are also responsible for ensuring that any contractor or trades person, they engage, are licensed.

The Customer Installation Safety Plan addresses the management of safety from within a customer's premises to the Point of Supply (i.e. the connection between the customer's installation and Ausgrid's network).

Bush Fire Risk Management Plan

The objective of this Plan is to describe a management framework that when used correctly will:

- ensure public safety
- establish standards for vegetation management near electricity lines (particularly in bush fire prone areas)
- reduce interruptions to electricity supply that are related to vegetation
- minimise the possibility of fire ignition by electricity lines and associated equipment.

Ausgrid Network Standards

These Network Standards detail the design and construction requirements for Ausgrid's network assets which also apply to works funded by customers under contestable arrangements.

For example:

- NS 117 - Design and Construction Standards for Kiosk Type Substations
- NS 124 - Specification for Overhead Connections (100 - 400A)
- NS 127 - Specification for Low Voltage Cable Joints and Terminations
- NS 156 - Working Near or Around Underground Cables
- NS 195 - High Voltage Customer Connections (HVC'S)
- NS 199 – Safe Electrical Working on Low Voltage Assets

4 Application for Connection and Supply

4.1 Application for Connection

Prior to any electrical work commencing, an **Application for Connection** form (as shown in Appendix A) must be submitted to Ausgrid for:

- the connection of a new electrical installation to Ausgrid's network
- a proposed increase in the electrical demand of an existing connection requiring an increase in the capacity of the service connection; or
- an alteration to the electricity metering arrangements of an existing installation.
- a proposed alteration to an electrical installation, not included above, that requires the submission of a Supplementary Application for Connection, as stated in clause 4.3.

Where the customer has agreed, electrical contractors or ASPs and other agents, including the customer's electricity retailer, may submit the *Application for Connection* form on their behalf. It is the responsibility of the person submitting the application for connection to ensure all details on it are accurate and correct. If not the application will not be accepted.

The Application for Connection provides Ausgrid with:

- the customer and electrical installation details necessary to create or maintain Ausgrid's network customer connection database records; and
- the essential details of the proposed electrical installation work to enable Ausgrid to assess the correct method of connection to the network.

The NSW Electricity (Consumer Safety) Regulation now makes it mandatory from 1 June 2008 for electrical installation work to comply with the new version of the Wiring Rules - **AS/NZS3000:2007**.

All electrical installation work covered by Applications for Connection received by Ausgrid after the 1 June 2008 must comply with the new version of the Wiring Rules. Work covered by applications submitted prior to that date will be inspected under the 2000 edition of the Wiring Rules unless advised otherwise on the Application for Connection.

Ausgrid requires additional information for certain types of installations, in these cases the *Supplementary Application for Connection* form must also be submitted with the *Application for Connection* (refer to clause 4.3 for details).

It is essential that the *Application for Connection* and the *Supplementary Application for Connection* (if required) be completed in detail as far as possible to avoid unnecessary delays.

Application for Connection forms can be obtained at any Customer Operations office at no charge. An electronic version of the *Application for Connection* and the *Supplementary Application for Connection* can be obtained by sending an email request to the appropriate email address listed in clause 2.1. Forms can be submitted by fax, email or post. Forms can also be downloaded from Ausgrid's website by visiting, <http://www.ausgrid.com.au/Common/Our-network/Standards-and-Guidelines/Electrical-supply-standards.aspx>.

Ausgrid's standard arrangement is to provide **one connection point** to the network. Additional connection points may be considered, upon written application, where the need can be justified and safety is not compromised. The possibility of intermixture of supplies will be one of the primary factors considered. Each application for additional connection points will require a detailed field Service Mark by an accredited service provider funded by the applicant. The installation of an additional service line (overhead or underground) is not to commence until Ausgrid has granted permission in writing.

Delays can be avoided by ensuring an *Application for Connection* form is accurately filled out and submitted well in advance of the required supply connection date to allow Ausgrid sufficient time to assess the connection requirements. In some cases additional network assets may need to be constructed to enable the connection. For example a new rural connection involving the extension of the high voltage network.

4.2 Details required on the Application for Connection form

The following essential information where relevant must be included on the Application for Connection form to enable it to be processed by Ausgrid:

- name of energy retailer (if not known EnergyAustralia Retail will be the default supplier in accordance with National Electricity Market rules) (*mandatory for existing installations*)
- National Metering Identifier NMI (if existing installation) Ausgrid will assign the NMI number for new installations
- Ausgrid substation, pole or pillar number (i.e. the network connection point where the service line connects to the distribution mains)
- meter number/s of any existing metering associated with the installation
- address of the electrical installation and location details if in a rural area
- customer's full name, postal address and contact telephone number
- electrical contractor and Accredited Service Provider details and fax details for the return of Job Number (refer to clause 4.6).
- service connection, demand and load details. These include:
 - new, alteration to existing, upgrade requiring additional phases, separation of supply for metering different customers, Torrens Title development
- Overhead, underground, overhead to underground (UGOH), pole substation connection or grid connected generations systems
 - 100, 200, 300, 400 Amp or other size service connection
 - single or multiple installation, how many house services and the number of living or commercial units
 - domestic, commercial, builders temporary, special small service or other
 - calculated maximum demand of the existing and proposed total load per phase (This is to be calculated in accordance with the current version of AS/NZS 3000 Wiring Rules)
- service route length and rating of existing service connection
 - details of the job which may include:
 - (i) any special conditions applying to the use of the proposed electrical equipment.
 - (ii) whether the work involves Ausgrid employees working in conjunction with the customer's electrical contractor or ASP (eg disconnection of direct consumer mains at an Ausgrid substation to allow additions to the customer's switchboard).
- **Supplementary Application for Connection** form is attached if required (see clause 4.3)

Where there is insufficient space on the form, additional information may be attached with the form such as site plans and maps or included on a Supplementary Application for Connection form. Each attachment should also indicate the installation address of the premises and existing meter details to assist Ausgrid to process the application.

The customer, electrical contractor or ASP, who submitted the form is advised to keep a copy for future reference.

4.3 Supplementary Application for Connection form

Certain types of installations require evaluation by Ausgrid Customer Supply staff to ascertain whether the network has adequate capacity to accommodate the proposed connection. In order to complete this evaluation Ausgrid requires additional electrical load and site information that is not included on the *Application for Connection* form. In these cases, a *Supplementary Application for Connection* form must be completed and submitted with the *Application for Connection*.

Arrangements must not be made to carry out the proposed work or have it connected until Ausgrid has carried out its evaluation and notified the applicant of any special arrangements.

NOTE: Only one network connection point will normally be provided (see clause 4.1).

The following types of matters require evaluation by Customer Supply staff:

- new electrical work which exceeds a total of 20kW
- additional work, where the sum of the existing and proposed loads of an installation or separately metered portion of an installation exceeds 100 amps per phase
- work requiring the installation or alteration of CT (current transformer) metering. (see clause 4.4 for further details)
- all high voltage installation work and low voltage work on installations supplied at high voltage where the proposed low voltage load increase exceeds 100 Amps per phase
- multiple residential unit developments (eg town houses, villas and home units) with more than six separately metered units
- work where the proposed equipment may cause excessive fluctuation of voltage (eg furnaces, welding equipment, x-ray machines, frequently started motors, etc. Refer to the Service and Installations Rules of NSW)
- all connections in rural areas
- new connections or extensions where the service or consumers mains are connected directly at any substation (pole, kiosk, ground or chamber substation)
- any application by or on behalf of a coal mine
- New and altered small and large grid connected generator systems. See clause 4.5 for further details.
- Details related to Power Quality effects on Ausgrid's Network. See Clause 4.10 for further details.

The plan required for the Supplementary Application for Connection must show:

- cross streets
- existing construction
- location of service and metering equipment
- details of all segments of the route of any underground service including; connections at both ends of the cable, excavation, reinstatement material, and method of laying. (It may be necessary to obtain a detailed underground cable location plan from Ausgrid's Customer Operations or Customer Supply group to complete this section)
- details of all segments of the route of any overhead service including:
 - clearance to the point of attachment
 - positions of any existing poles or proposed new poles to be erected, including use of a pole where other authorities services exist.

Printed Supplementary Application for Connection forms can be obtained at any Customer Operations office at no charge. An electronic version can be obtained by sending an email request to the appropriate email address listed in clause 2.1 or by visiting our website,

<http://www.ausgrid.com.au/Common/Our-network/Standards-and-Guidelines/Electrical-supply-standards.aspx>.

4.4 Request for Current Transformer (CT) metering

The CT Metering Application form (See Appendix B) must be completed and faxed to (02) 92773560 or emailed to nemsrpop@ausgrid.com.au prior to energising any new or upgraded sites that require CT metering.

This form will be sent to the applicant as part of Ausgrid's approval process for new or additional load. See Clause 4.6 for further details. It is also available from your local Customer Operations office.

The form is used to capture data that is unique to the CT installation site such as

- the retailer
- customer's details
- electrical contractor
- metering provider
- ALL existing metering to be removed

As the information must be confirmed prior to the energisation of the site and may take up to **ten** days to process, to avoid delay, it is suggested that the details in CT Metering Application form be submitted as soon as possible.

Prior submission of a completed CT Metering form is necessary to enable energisation of the installation.

4.5 Small Scale Grid Connected Generation Systems

As defined by the Service and Installation Rules of NSW, small scale parallel customer generation systems are rated at a maximum of 10kW per phase.

Customers may install small scale grid connected generation system to their installation for the purpose of generating electricity for use within their installation and/or feeding electricity back into Ausgrid's Network.

It is the responsibility of the accredited solar installer and the customer's electrician to ensure the proposed grid connected generating system is compatible with the customers existing private electrical installation (including the service mains) and operates in the manner intended.

Consideration must be given into the effects that the grid connected generating system may have on the customer's installation as well as Ausgrid's low voltage network. The effects of potential Voltage rise/drop, size of consumers and submains must be considered.

All new small scale grid connected generation Systems in Ausgrid's Network area are to be Net metered¹. Ausgrid publication ES3 – Metering Installations details the metering requirements for these installations.

- It is the responsibility of the person submitting the AFC to ensure that the following conditions have been met.
- Meet the requirements of AS 4777 parts 1, 2 and 3 (Grid Connection of energy systems via inverters), AS/NZS 3000 (wiring rules) and AS/NZS 5033 (installation of photovoltaic arrays).
- Designed and installed by a person who has been accredited by the Clean Energy Council
- Meet the requirements of the Clean Energy Council for inverter and PV panel certification.
- Is installed in accordance with Clean Energy Council guidelines

Large scale grid connected generators (greater than 10kW's per phase) are generally dedicated generation systems and normally consist of turbines powered from such sources as large scale wind or solar farms, hydro, gas or other fuel powered generator systems. These large grid connected generation systems will be connected as a Net metered installation as described in 4.5.2. A separate generator connection agreement may be required after the submission of a appropriately completed AFC and supplementary AFC.

¹ Other than those previously connected as part of the NSW Solar Bonus Scheme.

Where applicable, large scale grid connected must also meet the requirements of stated above.

4.5.1 Net Metered Grid Connected Generation Systems

Net metered grid connected systems are those where the output of the generator is consumed by the household and any excess energy is delivered back into the Ausgrid Network through a bi-directional meter which must be located at the installations Main Switchboard.

Where customers are applying for grid connected generation system they must meet the requirements of clause 4.5.3 below .

4.5.2 NSW Solar Bonus Scheme

On 1 July 2011 the NSW Government announced the closure of the NSW Solar Bonus Scheme to all new applications submitted after 29th April 2011. Applications submitted before the 29th April 2011 will be assessed under the conditions of the NSW Solar Bonus Scheme and its various amendments.

The NSW Solar Bonus Scheme will continue until December 2016 for those customers who have connected as part of the scheme and continue to be eligible to receive the bonus.

Customers receiving the Solar Bonus credits must advise Ausgrid of any change in circumstances that may affect the customer's eligibility for the bonus or the rate at which the bonus is paid.

Circumstances which can affect eligibility for the SBS include increases in generator capacity and a change in the customer at the premises. It is a customer's responsibility to ensure that they continue to be eligible for the bonus.

Full details regarding eligibility can be found at the DITIRS website at www.ditirs.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme

Customers can change their metering configuration without affecting their eligibility for the NSW Solar Bonus Scheme. Ausgrid will supply the metering at no additional charge but the installation of the metering will be at the customers cost.

All notifications of change in circumstances and metering configurations must be notified to Ausgrid by submitting an Application for Connection and Supplementary Application for Connection as detailed in sections 4.1, 4.2 and 4.3.

It is an offence for a customer not to notify Ausgrid of a change in their circumstances which affect their eligibility for the bonus (Section 15A (8B) of the Electricity Supply Act 1995).

4.5.3 Details required for all Inverter Grid Connected Generation Applications

The following information must be supplied for all applications for any installations with inverter grid connected generation capabilities,

- Full details of the generation system including manufacturer, model number and all electrical specifications of the output of the generation system, both the PV panel/turbine/other generation sources AND the inverter; and
- Size (in kW's) and number of generation sources (e.g. solar panels, wind turbines or other renewable energy generator); and
- Size (in kW's) and number of the Inverters; and
- Confirmation that the inverter and panels are on the Clean Energy Council approved list. If it is not on the approved list, then NSW Fair Trading (or other equivalent) certificate of suitability for the inverter or panel; and
- A full description of all proposed protection equipment to be installed; and
- For wind generation systems a single line schematic diagram, showing the complete electrical details and specification of the proposed inverter grid connected generation system installation.
- AFC and a supplementary AFC (see Appendix A) must be submitted to Ausgrid, and
- The Installers CEC Accreditation number, and
- The grid connected generation system is to be metered in a Net configuration,

For grid connected generation systems greater than 10kW per phase an AFC and a Supplementary AFC (see appendix A) must be submitted to Ausgrid. For each application for these types of installations, a generator connection agreement will usually be required. Further information regarding these generator connection agreements is available from our local Field Operations offices or from our website.

The type of generation source (wind, gas etc) must be clearly marked on the Supplementary AFC.

The customer should contact their electricity retailer regarding the availability and conditions of any feed-in tariff that may be available.

NOTE: See clause 8.2 "Inspection of Electrical Installation Work" regarding the inspection requirements of any grid connected generation systems after connection to the customers' installation.

4.6 Ausgrid's response to the application

When the application has been considered and Ausgrid is satisfied that the proposed connection is suitable, Ausgrid will approve the application by issuing a *Job Number* to the person who submitted the *Application for Connection*.

Ausgrid will inform the applicant of any special requirements relating to their Application for Connection. The following information will be supplied to the applicant if relevant:

- Any special conditions relating to the connection (eg in rural, isolated or undeveloped areas, the network may need to be extended or other customers may need to be reimbursed for extensions they previously funded or for unusual loads, special connections applying to operating equipment.
- Funding arrangements and applicable monopoly and or miscellaneous fees. (Note that all new installations requiring a National Metering Identifier (NMI) will be charged a Site Establishment fee when the Notification of Service Work (NOSW) form is received from the ASP for the installation.)
- Confirmation of the size and capacity of the service line and type of current transformers if Ausgrid estimates that the maximum demand of the service or separately metered portion of an installation exceeds 100 Amps rating.
- The need for a substation on or near the premises.
- Whether work, involving an extension to Ausgrid's underground or overhead network, is required and who is responsible for the associated costs.
- Lead times necessary for the ordering of Ausgrid funded equipment and for installation of major items such as transformers, switchgear and cable works which will require inspection and co-ordination with Ausgrid field staff.
- An application for CT metering will accompany the load approval if CT metering is proposed. See clause 4.6.

Electrical contractors and ASPs should not proceed with the electrical installation work or service work unless they have received an Ausgrid **Job Number** and are completely satisfied that Ausgrid has provided all the necessary information as detailed above and any special service requirements have been considered.

The issuing of a Job Number by Ausgrid must **not** be considered as approval that the proposed electrical installation design/work meets the requirements of AS/NZS 3000 Wiring Rules, the Service and Installation Rules of NSW or any other relevant standards. This responsibility remains with the electrical designer, installing electrical contractor and/or ASP.

When processing the Application for Connection, Ausgrid will determine if a Site Establishment Fee applies to the installation (refer clause 4.7 and ES5 for charges). If the Site Establishment Fee applies, the person who submitted the form will be notified when the Job Number is issued.

A full list of accredited service providers can be obtained from DTIRIS phone (02) 9895 0008 or from their website asp.scheme@industry.nsw.gov.au.

If construction work associated with the Application for Connection has not commenced within 12 months from the date that the Application for Connection was approved by Ausgrid, a new application may be required.

4.7 Site Establishment Fee (SEF)

As detailed in *ES5 - Charges for Network Miscellaneous & Monopoly Services*, the Site Establishment Fee (SEF) will be charged where a customer's installation requires the creation of a new National Metering Identifier (NMI). The fee covers the issue of a meter by Ausgrid and its coordination with AEMO (Australian Energy Market Operator) for the purpose of establishing the NMI (in MSATS (Market Settlement and Transfer System) and for checking and updating network standing data. It will apply to new premises or to any existing premises for which AEMO requires a new NMI. This includes a new account at a new premise or an additional account at an existing premise.

A new NMI will be allocated to all new installations which include:

- temporary builder's supplies
- permanent unmetered supplies
- single domestic residence
- single customer commercial sites
- multi-customer commercial and domestic sites (a new NMI will be allocated for House Lights, essential services etc and for each separately metered account customer or separately metered living unit, shop, factory or business)
- duplex residences (new NMI for each separately metered living unit)
- separation of supply (new NMI for the new separately metered portion only)
- change in the type of network connection. (For example, where an overhead service line is replaced by an underground cable direct from a substation. In this case, a new NMI is created and the old NMI is made extinct.)

The Site Establishment Fee **does not** apply in the following circumstances involving **Temporary Builder's Services (TBS)**, where an existing service line is 'relocated' on the same site and no new NMI is created:

- a new TBS, where an existing single domestic residence is being demolished and the site redeveloped for a new single domestic residence only. The associated NOSWs for the recovered and the new metering/service lines must be submitted to Ausgrid at the same time. The NOSW for the new metering/TBS should be marked 'Service Line Relocation'.
- For a new single domestic residence, where the TBS used for its construction is being removed. The associated NOSWs for the recovered and the new metering/service lines must be submitted to Ausgrid at the same time.

NOTE: The Site Establishment Fee will be charged (and a new NMI created) for the initial 'greenfield' TBS. The NOSW for the new metering/service line should be marked 'Service Line Relocation'.

The Site Establishment Fee will usually be charged to the ASP responsible for installing the metering for the installation. It will be charged when the Notification of Service Work (NOSW) form is submitted detailing metering for the new installation or the transfer or separation of an existing installation for which a new NMI is to be created. If an ASP is not involved with the work, the Site Establishment fee will be charged to the installing electrical contractor upon submission of a Certificate of Compliance (CCEW).

4.8 Application for supply

If electricity is already connected to the premises and the electricity account is to be transferred to a new occupier, an Application for the Supply of Electricity will need to be made with a licensed electricity retailer. A complete list of licensed electricity retailers can be found on the IPART or AER website

An *Application for Connection* form will also be treated as an application for supply unless it is clearly indicated on the form that alternative arrangements have been made with another licensed electricity retailer.

The Standard Form Customer Connection Contract permits Ausgrid to require the customer at any time to give security or more security for the payment of what is owed under the contract. Ausgrid's publication *NCP7 - Application of Network Use of System Charges* provides guidelines on network tariffs and charges.

4.9 Permanent Unmetered Supplies

As a general rule the maximum load that will be approved by Ausgrid for Special Small Services (SSS)/Permanent Unmetered Supplies (PUMS) or Type 7 Metering Installations, are loads of no greater than 10A (2.4kW) single phase and supplied from the one Network Connection Point. Approval for any proposed connections greater than 10A (2.4kW) single phase must be sought from a local Ausgrid Customer Operation office.

In addition PUMS loads should be of a constant consumption (i.e. non variable loads). If the consumption of the PUMS is variable it should either be metered or assessed at its maximum variable consumption rate (e.g. a PUMS that has a maximum current of 10A will be assessed at 10A during its period of energy consumption).

The customer must supply Ausgrid with details of each PUMS device which is proposed to be connected to the Ausgrid Network, prior to submitting an AFC, by submission of appropriate details to the following email address (see clause 4.9.2 for further details) pums@ausgrid.com.au

This information will be collated for each PUMS customer in a PUMS "Load Table". From this load table an "Inventory Table" of *each* PUMS installation will be prepared for inclusion under a single NMI. See clause 4.9.2 for further details.

Where a customer's PUMS installations span across the Ausgrid Network area a NMI will be allocated for the following geographical areas:

- South of Broken Bay,
- North of Broken Bay,
- Far North (upper Hunter Valley, e.g. Muswellbrook, Singleton).

Multiple PUMS installations can be allocated under the one NMI.

All unmetered supplies must comply with Section 5 of the Service and Installation Rules of NSW.

4.9.1 Alterations and Additions of PUMS Installations

An Application for Connection (AFC) **must** be submitted for each ***new or alteration of an existing*** PUMS installation.

In *addition* to the requirements outlined in clause 4.2 of this document, each AFC for a PUMS installation **must** contain the following information:

- A specific device identifier of the equipment to be installed aligned with the Load Table supplied to Ausgrid by the customer. See clause 4.9.2. This detail can be populated in the "details of job" or in the "other" section of "Premise Type" of the AFC.
- PUMS customer name, NMI and account number if an existing customer.
- Full and exact address of the proposed PUMS.
- Nearest cross street of the proposed PUMS.
- Pole or Pillar where the proposed PUMS is to be connected.
- Contractor and ASP details.
- A4 size diagram of proposed layout, location and connection of the PUMS installation.

AFCs not containing the above information will not be processed and connection to the Ausgrid Network refused.

To assist in identification and reconciliation of PUMS installations the customer may provide Ausgrid with a site specific customer identifier when submitting an AFC. Ausgrid will allocate its own site specific identifier.

For removal or permanent disconnection of a PUMS installation, a NOSW form must be submitted to Ausgrid.

4.9.2 Management of PUMS Installations

Each PUMS customer must provide the required device information to Ausgrid upon request and prior to the installation of any new or altered PUMS device to the Ausgrid Network. This mandatory requirement is necessary to ensure accurate energy consumption values can be calculated and agreed between Ausgrid and the customer. This will also allow for ease of application, auditing, reconciliation and inspection of PUMS installations.

In order to confirm the Daily Average Load (DAL) for an unmetered device that is connected to the Ausgrid Network, the customer must provide the electrical technical specifications for each device. These specifications must include total operating wattage, voltage, current and power factor for each device, which will allow for an accurate assessment of energy consumption as required by jurisdictional regulations and the Ausgrid Standard Form Customer Connection Contract. In addition to the electrical specifications, if the device is controlled to operate at specific times, the customer must provide the type of control (e.g. time switch, ripple, photoelectric (PE) cell) and the hours of use per day.

Appropriate documentation outlining the above requirements must be submitted to Ausgrid upon application for the registration of new PUMS devices.

Contact details for PUMS account queries and the addition of new PUMS devices to the load table, should be forwarded to the following email address: pums@ausgrid.com.au

On an annual basis Ausgrid may contact each PUMS customer to confirm that the inventory table and associated load table of devices is up to date. Each PUMS customer must supply contact details to Ausgrid for account and technical enquiries.

The customer must ensure that PUMS installations are able to be fitted with an inspection label which will be attached to the PUMS installation during the mandatory inspection by an Ausgrid officer.

4.9.3 Lighting

For the purposes of classifying PUMS installations in this document, lighting installations which are covered under the Department of Trade and Investment, Regional Infrastructure and Services, Division of Resources and Energy Water 's NSW Public Lighting Code framework are not considered a PUMS installation.

Approval may be given by Ausgrid for the lighting of public areas and private places, other than those covered by DWE NSW Public Lighting Code, to be supplied from the distribution mains as a PUMS installation.

The conditions and charges applicable will be made available on written application. Ausgrid's document ES7 - Application of Network Use of System Charges provides more detail regarding this requirement.

Smart Poles where access is unrestricted so that further load may be added to the connection point must be metered or will be assessed at their maximum possible load (i.e. If the Smart Pole contains a 10A GPO that is available at all times the installation will be assessed at 10A continuous in addition to the luminaries' usage) as the load on these connection points are considered variable.

4.10 Power Quality Assessment Requirements

For low voltage customers installing equipment rated at greater than 75A per phase, and for all High Voltage installations, an assessment and allocation of permissible voltage fluctuation, unbalance and distortion levels is required. Any connections which meet these criteria must complete the Power Quality Assessment Form (See Appendix C) and submit to their local Customer Operations office for processing prior to energisation of the installation.

For all low voltage installations, equipment rated at less than 75A per phase must comply with the relevant Australian Standards as mandated in Section 1.10 of the Service and Installation Rules of NSW. Power quality assessment for High Voltage installations will be assessed based on the Australian Standards as indicated in the relevant clauses of National Electricity Rules.

5 Service Connections

5.1 Service marking (determining the connection point)

When new or altered connection arrangements are proposed, it may be necessary to conduct a service mark to determine the most effective way to connect the service and metering equipment so that it complies with the relevant documentation set out in clause 3.2. This may be carried out by a suitably authorised ASP.

Ausgrid can be requested to determine the service mark however, a monopoly fee will be charged for this service (i.e. Design Information Fee as per ES5 – *Charges for Network Miscellaneous and Monopoly Services*).

5.2 Underground or overhead service connections

A network connection via underground service mains will apply to installations connected in areas reticulated by underground distribution mains. The standard connection in overhead mains reticulated areas is via an overhead service line however, an application may be considered for an underground to overhead (UGOH) connection under certain conditions as detailed in the NSW Service and Installation Rules. Additional conditions for future undergrounding, as highlighted in Ausgrid publication ES10, may also apply.

The premises listed below, which are in an urban overhead distribution mains area, must make provision for connection to future underground distribution mains:

- commercial premises with a property frontage greater than 50 metres
- multiple residential developments (eg home units or villa homes) not including duplexes.

In such developments the customer must install:

- an underground service line to a suitable existing street pole; or
- sheathed underground consumers mains to a customer pole erected near the front property boundary (within 1 metre).

NOTE: Where neither of the above methods of supply is suitable contact the local Customer Supply Office.

5.3 Connections crossing an adjoining property

New or altered service mains (underground or overhead) are to be constructed so they do not cross an adjoining property. If there is no other alternative, a suitable easement in favour of Ausgrid must be obtained for the service mains where they cross the adjoining property.

Dedicated privately owned consumers mains that cross adjoining property must also be covered by a suitable easement in favour of the property being supplied. Refer to Clause 5.7.1 if the consumers mains are to be shared with installations on other properties.

5.4 Shared road crossing service lines

A previous service connection arrangement was to connect multiple services to installations from:

- one service line via a span of overhead mains crossing a road (or at the end of a cul-de-sac), connected between Ausgrid's distribution pole and a road-crossing (lead-in) pole; or
- to underground service mains crossing a roadway (or at the end of a cul-de-sac), terminating at an Ausgrid underground pillar.

Where shared road crossing service lines (including associated underground pillars) require upgrading to increase their current carrying capacity or to increase the number of phases, i.e. 1 phase to 3 phase upgrade (or permanent removal) as a result of a customer load application, then customer requiring the work must fund the full cost of the contestable work.

A Level 2 ASP may carry out this work, with the exception of:

- work on pole transformer poles
- the installation of an Ausgrid underground pillar which requires suitable Level 1 accreditation.

The mains work must comply with the Service and Installation Rules of NSW. Consideration must be given to the total electrical loading on the new mains, to ensure the mains are sized adequately, to avoid overloading. Any redundant road crossing poles must be removed as part of the works.

In certain cases, Ausgrid may NOT permit the reconnection of upgraded service mains to an existing road-crossing pole but may require the customer to install a private Pole A. For instance, where there is an opportunity for Ausgrid to permanently remove the road-crossing pole, as there are no other services connected to it or the road-crossing pole requires replacement to accommodate the upgraded service mains. The local Customer Operations office should be contacted to confirm the connection arrangements before commencing these projects.

A new service connection between a private Pole A and an Ausgrid road-crossing pole is not permitted. The service mains must be connected between the Pole A and the distribution mains located across the road in accordance with the Service and Installation Rules of NSW.

The ASP carrying out upgrading work of shared service lines must arrange to notify all affected customers of the impending interruption to their electricity supply by following the notification procedures set out in Ausgrid's Standard Form Customer Connection Contract (i.e. affected customers must be given at least two business days notice of an interruption to supply and the duration of the interruption must be accurately notified).

5.5 Connections to pole transformers

Service connections (brand new or upgraded) at pole transformers (PT's) are only permitted as a last resort. A new private Pole A must be installed, where this would avoid a service connection at a PT. Ausgrid may permit a midspan connection (where LV ABC distribution mains exist) as an alternative under certain circumstances.

The *Application for Connection* form must indicate whether a service line connection at a PT is being proposed. Ausgrid must assess these particular applications and the project may only proceed where Ausgrid grants approval (monopoly charges apply; refer to ES 5 *Network Miscellaneous Connection Charges*).

NOTE: The Level 2 ASP must provide a minimum of 10 working days prior notice to Ausgrid's local Customer Operations office to enable the assessment/approval of the proposed service connection.

Where the connection to the PT incorporates consumers mains, a fully completed CCEW covering the installation of the consumers mains must be completed and submitted prior to energising.

5.6 'Tap-off' consumer's mains connections

In older reticulated areas it was common for multiple premises to be connected (tapped off) a single Ausgrid service line via cross property consumer's mains. These arrangements were particularly common for terrace houses.

The following procedures apply for a customer who requires the removal of a cross-property tap-off consumer mains to an adjoining premises (for example when they are renovating their premises):

- (a) Inform the neighbour of the requirement to remove their cross-property consumer's mains prior to the commencement of any work and coordinate the works in direct consultation with the neighbour.
- (b) Arrange for the installation and funding of temporary tap-off consumer's mains to the neighbouring premises prior to disconnecting and removing the existing tap-off consumer's mains. This is required where the neighbour requires additional time to arrange (and fund) the installation of a new permanent service line connection to their premises (i.e. a separate connection to Ausgrid's distribution mains in the roadway).
- (c) Where it is not possible to install temporary tap-off consumers mains, the existing tap-off connection must not be disconnected and removed until the neighbour has installed a new permanent service connection to their premises.
- (d) The neighbour must be given a minimum of two business days written notice of any interruption (disconnection and reconnection) of their electricity supply required to install the temporary tap-off consumers mains (the notice must include the duration of the interruption). Provision of this notification is a regulatory requirement. Apart from the time specified on this

disconnection and reconnection notice, the neighbouring property/ies must not be left disconnected.

- (e) The installing electrical contractor and ASP must submit completed NOSW/CCEW forms for the work carried out.
- (f) Private legal advice should be sought if the adjoining property owner is unwilling to cooperate or to install a new separate service line.

Ausgrid will raise a Defect Report on any temporary supply connections which will be subsequently followed-up by an inspection to ensure that a new permanent service or other suitable arrangements have been made.

The neighbour/s with the cross property consumer mains must either arrange and fund a new separate service line to supply their premises within a reasonable time period or make other permanent arrangements such as a suitable easement covering their private consumer mains across the adjoining property.

5.7 Supply Requirements for Subdivided Land

The service connection to subdivided land will depend on the land title under which the subdivision is created. The following service connection arrangements shall apply.

5.7.1 Torrens Title Properties

All Torrens Title lots are to be treated as separate electrical installations and connected via a separate service connection. Service connections shall not encroach on any other lot of land unless they are covered by a registered easement in favour of Ausgrid.

On an exception basis only, for justified practical reasons, Ausgrid may consider alternative arrangements for sharing unmetered consumer owned mains, pits, pillars and poles, providing they are covered by a legally binding arrangement between all affected land owners specifying (as a minimum) obligations for:

- ownership,
- maintenance,
- relocation,
- repair.
- Examples of such arrangements are:
 - Community Title over the land where the jointly owned infrastructure is situated (see Clause 5.7.3), or,
 - Strata Title over the land where the jointly owned infrastructure is situated (see Clause 5.7.2), or
 - 88B easement over the land where the jointly owned infrastructure is situated and an 88BA Positive Covenant specifying the obligations stated above.

5.7.2 Strata Title Properties

Strata title subdivisions will be connected via one point of supply and have one metering location. Any deviations from this arrangement must be approved by the local Customer Operations office.

5.7.3 Community Title Properties

Community Title subdivisions will have one point of supply to the development, but each separate dwelling can be separately metered. Due to the complexity of these developments, you must consult your local Customer Operations group prior to commencing work.

The electrical reticulation to each dwelling must comply with AS/NZS3000.

5.8 Service Connections to Paper Lead Distribution Cables

Ausgrid publication ES4 – Service Provider Authorisation, specifies that Level 2 category 2 ASP's are not permitted to make service connections to existing paper lead distribution cables. If a service is required to be connected to this type of cable the following methods (in order of preference) shall apply:

- (a) A new Ausgrid distribution pillar shall be installed. This is achieved by extending the existing paper lead cable with an appropriate length of XLPE. The level 2 category 2 ASP may then connect to the new pillar.
- (b) A new private pillar located on the customer's property shall be installed via a tee joint to the paper lead cable. The level 2 category 2 ASP may then connect to the new pillar.
- (c) A tee connected service shall be installed as an absolute last resort by a Level 1 ASP **as a Contestable project**

Any cable jointing work conducted on the paper lead distribution cable must be carried out by **Ausgrid, or in the case of a Contestable project** an authorised level 1 paper lead cable joiner.

NOTE 1: Upgrades of the Network, **including installation of pillars in the above scenarios**, to provide a Level 2 connection for loads up to and including 200amps, will in most cases be funded by Ausgrid.

NOTE 2: Where Ausgrid performs the work it is important to allow at least three months to adequately schedule the work with all appropriate authorities.

5.9 Connection of Bare Aerial Consumers Mains

All new or upgraded electrically unprotected aerial consumers mains must comply with Section 3 of the Service and Installation Rules and AS/NZS3000.

Customers must not install new or replacement bare aerial electrically unprotected consumers mains or reconnect existing disused bare aerial consumers mains unless specific approval has been given by Ausgrid.

NOTE: 'Disused' refers to installations that have been disconnected by removal of either the service fuses, metering or service mains bonds, or a period greater than six months.

For electrical safety reasons, Ausgrid strongly recommends that customers consider the installation of XLPE insulated aerial mains (complying with AS/NZS 3560) in lieu of bare aerial mains (where bare aerial mains are otherwise permitted).

5.10 Connections at Kiosk and Chamber Substations

5.10.1 New Connections

All new installations supplied via a dedicated low voltage circuit that originates within an Ausgrid kiosk or chamber type substation, must have a circuit breaker as the Service Protective Device at the installation main switchboard. The circuit-breaker/Service Protective Device may also function as the main switch for the installation. The risk of a short-circuit between the substation and the Service Protective Device must be minimised.

Where these conductors are consumers mains, a fully completed CCEW covering the installation of the consumers mains must be completed and submitted prior to energising.

5.10.2 Alterations and Additions

The Service and Installation Rules of NSW require that a Service Protective Device must be located adjacent to or incorporated in the main switchboard when alterations or additions to an installation are being carried out (with some exceptions).

The following is a list of typical situations, where Ausgrid may require a Service Protective Device to be installed at the main switchboard in conjunction with alterations or additions to existing installations connected directly to the low voltage within kiosk or chamber stations:

- (1) Consumers mains are being replaced (e.g. due to increased load) or relocated or extended due to works within the premises;

- (2) The main switchboard or CT Metering enclosure is being relocated, reconstructed or significantly altered to accommodate a change in capacity such as an increase or transfer of electrical load;
- (3) Switchgear panels are being added to the main switchboard to accommodate additional circuits which increase the maximum demand of the installation or to accommodate load profiling equipment such as Power Factor Correction or voltage optimization/regulation equipment (see note 1);
- (4) Additional circuits are added to the main switchboard resulting in an increase in the maximum demand and/or require a change to the upstream installation protection equipment;
- (5) Ausgrid is required to increase the capacity of its substation as a result of changes to the customer's installation;
- (6) Ausgrid's protection equipment within the substation is no longer considered adequate for the customer's installation.

NOTE 1: When installing these types of devices consideration must be given to the requirements of all the relevant sections of AS/NZS3000 and the Service and Installation Rules of NSW, in particular the requirement for under and over voltage protection.

NOTE 2: Each situation must be assessed by Ausgrid on a case by case basis prior to carrying out the additions or alterations.

Ausgrid publication NS 114 clause 5.17 (chambers) or NS 117 clause 3.16 (kiosks) must be referred to prior to making a request for consideration of alternative arrangements for the location of the Service Protective Device.

5.11 Out of Area Connections

In special circumstances Ausgrid may consider AFCs from customers whose premises are located outside Ausgrid's distribution network area, known as 'out of area' customers. These AFCs must be clearly marked at the top "Out of Area Connection" and normally involve installations on or near Ausgrid's boundary with neighbouring distributors Endeavour and Essential Energy. The AFC will be assessed in consultation with the relevant neighbouring distributor to determine the relative viability of a normal in area connection to that distributor's network.

Ausgrid will generally not agree to such connections where it requires significant Ausgrid funded augmentation works. Where an out of area connection is approved the customer will effectively become an Ausgrid network franchise customer including the application of Ausgrid' Standard Form Customer Connection Contract to the customer.

The design and construction of the connection assets must comply with all of Ausgrid's normal requirements for in area connections and must be carried out by an ASP with relevant Ausgrid authorisation. These connection assets will be owned and maintained by Ausgrid.

6 High Voltage Connections

The NSW Service and Installation Rules and Ausgrid require the controller (i.e. the owner or a lessee) of any premises having a high voltage (HV) installation to produce an Installation Safety Management Plan. In addition Ausgrid will collaborate with the controller of a HV installation to produce an Operating Protocol as detailed in clause 6.2. Clause 6.1 below lists some suggestions to assist with the preparation of a suitable Installation Safety Management Plan. Additional information may be obtained from Section 7 of the NSW Service and Installation Rules and NS195 - *High Voltage Customer Connections (HVC'S)* and the references given in clause 6.1.

Ausgrid's Standard Form Customer Connection Contract provides that, in the case of a new HV installation, connection may be withheld until a complete Installation Safety Management Plan has been prepared as required. It is worthwhile considering the drafting of a preliminary Installation Safety Management Plan during the design stage of a proposed HV installation. Preliminary installation safety considerations may suggest the need for certain features to be incorporated into the installation. An Installation Safety Management Plan for any new HV installation must be submitted to Ausgrid to confirm that such a plan has been prepared.

Ausgrid does not undertake to approve any Installation Safety Management Plan that is presented nor does Ausgrid assume responsibility for the accuracy or completeness of such customer documentation. While Ausgrid may acknowledge the presentation of a plan, and perhaps comment on it, this is not to be construed as an approval or verification of the completeness of such a plan.

Occupational Health and Safety legislation contains specific requirements regarding the elimination or control of risk of injury by electricity in the workplace. The Electricity (Consumer Safety) Act and Regulation charges the owner/controller of any electrical installation with responsibility to correctly maintain their installation. Those preparing plans are advised to familiarise themselves with these legislative requirements. Due care in the preparation and implementation of an Installation Safety Management Plan in line with the following suggestions will assist in the discharge of these legal responsibilities.

6.1 Installation Safety Management Plan

The contents of an Installation Safety Management Plan should address the full range of risks likely to be associated with the operation, maintenance and possible deterioration of electrical equipment as it ages. The Plan should be based on appropriate risk analysis techniques and cover matters such as non-compliant equipment, upgrade and refurbishment programs, site hazards, etc. An Installation Safety Management Plan for a HV installation should not be limited to the high voltage sections of the installation and it is strongly recommended that a customer extend the Plan to cover all parts of the electrical installation.

The following are some, but not necessarily all, of the topics that should be considered for inclusion in a plan:

- A single line diagram (schematic) for the high voltage installation showing all switches and circuit breakers and their identifying labels or numbers.
- A set of site specific operating rules covering all aspects of operating the high voltage installation. This should contain specific operating instructions for each piece of high voltage equipment. It should also contain a procedure for arranging isolation of the installation from the Ausgrid high voltage network. Ausgrid's Customer Operations officer, coordinating the arrangements for connection of a new installation, will on request, provide details of the Operating Agreement procedure that applies to arranging isolation of a HV installation from the network.
- The qualifications and training of people who will be allowed to operate and/or work on the high voltage installation. This should also address retraining/retesting/re-accreditation procedures.
- Procedures for ensuring that areas containing high voltage equipment are accessible only by persons suitably qualified to enter such areas.
- Induction procedures for acquainting non-employees (contractors, visitors, etc) with the requirements of the plan when relevant.
- Inspection and maintenance programs including a periodic testing regime that will ensure all high voltage equipment remains serviceable and safe and that protection schemes will operate

correctly when required. A testing regime may need to include both condition monitoring and functional testing.

- An action plan to address deterioration and aging of equipment or non-compliance with applicable codes such as Australian Standards by instituting a suitable repair and replacement program.
- Procedures to ensure that no extension or alteration of a HV installation is commissioned without Ausgrid's agreement (refer Electricity (Consumer Safety) Regulation 2006). Notification for extensions to the low voltage installation must also comply with this regulation.
- Procedures to ensure prior negotiation with Ausgrid concerning proposed alterations that may affect the interface between the distribution network and a HV installation, or increase and/or change the nature of an installation's load. (see Section 8 of this document)
- It may be relevant to include procedures for safe handling of insulating oils or other substances that will be encountered by staff/contractors in the course of maintaining or repairing electrical equipment (environmental considerations).
- Hazardous areas including confined space risks must be addressed if these exist or may arise on the plant.
- Emergency contacts and procedures such as urgent isolation of electricity supply. The correct contact details of authorised personnel must be shown.
- Procedures for ensuring that parts of a HV installation (eg underground cables) are not damaged by non-electrical staff or contractors (eg by excavators) - Warning signs may be required in some locations.

Additional References

- AS2067- 1984 Switchgear assemblies and ancillary equipment for alternating voltages above 1 kV.
- ENA NENS 03 -2006 National Guidelines for Safe Access to Electrical and Mechanical Apparatus.

6.2 Operating protocol

An operating protocol is a brief document that defines the respective responsibilities of the controller of a private high voltage installation and Ausgrid for operating (switching) of parts of the customers installation and the electricity distribution network at the interface of the installation and the Network. It also records the contact details for communication between Ausgrid's System Control personnel and the customer's high voltage operating personnel. This document needs to be prepared in consultation with Ausgrid following preparation of the Installation Safety Management Plan.

7 Notification to Ausgrid

7.1 Certificate of Compliance – Electrical Work (CCEW)

From the 1 January 2007 the OFT CCEW form must be used by electrical contractors in place of the previous notification of Electrical Work (NOEW) form.

The NSW Electricity (Consumer Safety) Regulation details when a CCEW notification form is required to be submitted by electrical contractors to customers and to Ausgrid covering the details of their electrical installation work, the required test results and who carried out the work.

A copy of the CCEW must be given to the customer in every case for all electrical installation work.

A CCEW form must be submitted to Ausgrid within 14 days of the following work being energised:

- all new installations requiring a new network connection
- any alterations or additions to an electrical installation involving work by an ASP such as work on Ausgrid's service line or metering
- work on a switchboard or associated electrical equipment (other than work to repair or replace equipment that does not alter the electrical loading, method of electrical protection, system of earthing or physical location of the switchboard or equipment being repaired or replaced).

Work on switchboards that require notification to Ausgrid include the addition of new circuits and subcircuits or submains and any work that increases the rating of subcircuits and submains.

A CCEW is also required to be submitted to Ausgrid after correcting any notified defect in a customer's installation.

All work including repairs or replacements on customer's electrical installations must be tested by the installing licensed electrical contractor or their qualified supervisor (Electrical) prior to being energised.

In situations involving loss of electricity supply to a customer's premises, licensed electrical contractors are permitted to break the seals on the service fuse holders and replace blown service fuse elements. A risk assessment must be carried out to ensure the work can proceed safely. An ASP with Category 4 Authorisation must be contacted within two working days to reseal the equipment. For further details please refer to Ausgrid's publication ES4 – *Service Provider Authorisation*.

Ausgrid and the electrical contractor are legally obligated to retain completed CCEW forms for five years. CCEW forms, which are individually numbered, are available from the National Electrical and Communications Association (NECA) and some electrical wholesale outlets.

Where electrical installation work is to be carried out in conjunction with contestable work, the licensed electrical contractor must carry out the required tests and safety checks of the installation work and provide a signed copy of the CCEW form to the ASP prior to commencement of the contestable work. Further details relating to the ASP's responsibility are contained in our publication ES4 – *Service Provider Authorisation*.

Electrical contractors please note:

All relevant details on the CCEW form must be completed. Missing or incorrect information on the CCEW form may result in a defect being recorded under certain circumstances. As each CCEW form is individually numbered, duplicated copies of an original blank form will not be accepted. Assistance with how to complete CCEW forms correctly can be arranged at any of the Ausgrid Customer Operations offices if required.

Ausgrid files the records of inspection under Job Number or Installation Number and the customer's name and address. To enable correspondence or inspection details to be identified, contractors are required to accurately enter the Job Number or Installation Number, the name of the customer and the address of the premises concerned on the CCEW form being submitted. (These details are also required on the NOSW form.)

7.2 Notification of Service Work (NOSW)

ASPs are required to submit to Ausgrid, completed *Notification of Service Work (NOSW)* forms, detailing all contestable work performed. These forms must be lodged within two days of the work being energised. If electrical installation work is carried out in conjunction with the contestable work, the installing electrical contractor is required to provide the ASP with a completed copy of the CCEW form prior to the commencement of the contestable work. Ausgrid's publication ES4 - *Service Provider Authorisation* should be read for further details.

7.3 Lodging Notification Forms

Ausgrid will accept lodgement of forms by facsimile, post, email or at any local Customer Operations office. Contact details can be found in Section 2 of this document.

Electronic submission of forms is Ausgrid's preferred method. There are two options, email (see section 1 for email addresses) or via the use of eforms. Eforms is a web based application that allows users to submit their forms via an internet portal using a personalised login. All CCEW's, NOSW's and AFCs can be submitted using this application.

Facsimiles can be received 24 hours a day 7 days a week. The sender should retain proof of the transmission for verification if required. If an appointment or other action by Ausgrid has been requested on the facsimile or via email this must be confirmed by telephone with the relevant local Customer Operations office during business hours after making the transmission.

When sending CCEW forms by facsimile it is not necessary to send in the original paperwork unless Ausgrid requests further clarification or additional details. It is suggested that the original (customer's copy) be used for sending via the fax to ensure the transmission is legible. Fax transmissions received with missing or illegible information will not be accepted.

8 Appointments and Inspections

8.1 Work requiring an inspection prior to energising

The following types of installation work must be inspected by Ausgrid prior to energising:

- (a) New electrical installations supplied at **high voltage**.

The low voltage portions of these installations will be inspected on an audit basis providing a satisfactory mandatory Installation Safety Management Plan (ISMP) has been prepared by the customer and submitted to Ausgrid in accordance with the requirements of Ausgrid's *Customer Installation Safety Plan*.

- (b) New electrical installations containing **hazardous zones**.

All alterations and additions to these installations will be inspected in accordance with clause 8.2 below.

- (c) New consumers mains and main switchboards where the load at these points **exceeds 100 Amps**.
- (d) New CT (current transformer) metering and any unmetered submains supplying multiple metered tenants.
- (e) New permanently unmetered supplies (special small services) and additions to existing sites which affect the electrical loading of the installation.
- (f) Submains and sub-boards where the rating at these points exceeds 100 Amps.

If the electrical installation work involves this type of work, isolation may be achieved by:

- (a) Either the main switch, residual current device or circuit breaker controlling the new or altered installation must be left sealed in the OFF position; or
- (b) If a fused sub-circuit, the fuse element must be removed and the empty fuse holder re-inserted for safety; and
- (c) A suitable warning tag is to be fixed to the switchboard equipment clearly indicating that the relevant section of the installation cannot be energised until an inspection by Ausgrid is completed.

NOTE 1: Wherever it is possible to do so, the wiring to the control and protection equipment should be fully installed.

NOTE 1: Energising any of the types of installations listed above prior to an inspection by Ausgrid is a breach of the Electricity Supply Act.

8.2 Inspection of electrical installation work

As detailed in the Customer Installation Safety Plan, Ausgrid operates an audit inspection program aimed at securing compliance by both the installing electrical contractor and the electrical contracting company with the requirements for various categories and types of installation work.

Electrical installation work, notified to Ausgrid, will be inspected on every occasion where it is deemed to be the type that has a higher level of risk to people and property. This applies to the following types of installation work:

- additions in hazardous areas
- additions to existing high voltage installations
- rectification of installation, service or metering defects (Monopoly Re-inspection fees apply)
- changes to consumer mains and main switchboards, submains and sub-boards where the load at these points exceeds 100 Amps
- changes to permanent unmetered installations
- changes to CT (current transformer) metering and unmetered submains supplying multiple separately metered tenants.

- New, upgraded or altered grid connected generation systems.

Where it is impractical or inconvenient for the customer to isolate the electrical installation work of the types listed above after commissioning, electrical contractors should consider arranging an installation inspection prior to energising to avoid any disruption that may be involved during the inspection process.

8.3 Appointments

The local Customer Operations office must be contacted in person or by phone if you wish to discuss specific arrangements for the connection of a customer's electrical installation or to make an appointment for inspection. Five business days notice should be allowed for arranging appointments, to ensure a time can be mutually agreed. Prior to an inspection, the installation work must be complete and all notifications (and security deposits if applicable) lodged.

8.4 Inspections outside normal business hours

Under some circumstances customers may require Ausgrid to provide inspection services outside normal working hours. Arrangements for this work can be made by contacting the local Customer Operations office. Sufficient notice will be necessary to schedule the work. Normal business hours are between 7.30 am and 4.00 pm Monday to Friday excluding public holidays.

If the work involves the inspection of electrical installation work, the customer or the contractor requesting the work will be required to pay the recoverable costs involved in providing inspection services outside normal working hours. The fee for after hours inspections of contestable work will be charged to the ASP. AER regulated fees, as detailed in Ausgrid publication ES5 – *Charges for Network Miscellaneous and Monopoly Services* apply.

Pre-payment or a charge to an operations account will be requested if the amount has been determined in advance. Alternatively the customer or contractor may be requested to sign an 'Offer to Pay' form for billing upon completion of the work.

9 Identification

Ausgrid's employees and subcontractors, acting under Ausgrid's authority, must show identification to the customer before carrying out work on their premises. The identification must be carried on the person while they are on the job. Ausgrid issues photo **Identification Cards** to their employees and contractors indicating the nature of their authority.

Ausgrid issues a different form of photo identification card to individuals employed by ASPs after granting them authorisation to carry out contestable works on or near the distribution network. ASP photo identification cards do not authorise the individual to be an agent of Ausgrid. The contractual relationship is between the ASP and their customer.

10 Separation of Supply

Where a customer requires an existing installation to be rearranged into separately metered portions, (eg a new off peak hot water circuit or separation of the commercial part of the installation from the residential part) the customer should coordinate the electrical installation work with the contestable metering work.

Details of the authorisation required by ASPs to do contestable metering work are contained in Ausgrid's publication ES4 - *Service Provider Authorisation*.

No installations or part of installations are to be left energised and unmetered at any stage unless the installation is a Permanently Unmetered Supply and Ausgrid has inspected and approved the installation.

11 Defects

Defects are regarded as electrical installation and service installation work which do not comply with AS/NZS 3000 Wiring Rules, the Service and Installation Rules of NSW or Ausgrid's requirements and Network Standards that apply at the time of the installation.

Where electrical installation defects are found within a customer's electrical installation, the customer and the electrical contractor will each be given a copy of the inspection 'Defect' report. ASPs will be given a copy of a similar report covering any defects found in contestable service work. Electrical contractors and ASPs are required to rectify all defects without delay and within the maximum time specified by Ausgrid.

11.1 Defects in existing installations

Electrical contractors who observe existing electrical defects when working on customers' installations and equipment have a legal duty of care to advise the customer and ensure defects, that are immediately dangerous, are disconnected or made safe as soon as possible. Customers should be advised to have other defects that do not present a safety hazard, rectified within a reasonable period.

Where the contractor has reasonable grounds to believe that the customer may not disconnect the defective equipment or installation, or may reconnect it without having suitable repairs performed, the contractor should notify Ausgrid local Customer Operations office of the details of the defective installation. Contractors will not be charged inspection fees for defects that are not associated with their work.

11.2 Defect categories

MAJOR DEFECTS are considered to present a high risk safety hazard to life, health or property. Electrical installation and service work containing major defects **must not** be connected to the network.

If major defects are encountered during an inspection, the inspecting officer may isolate and appropriately label the section of the installation containing the major defect if possible. If this is not possible the entire electricity supply to the installation or the service line may need to be disconnected. Disconnection of the complete installation will only be carried out as a last resort if the situation cannot be made safe by other means. Any work carried out by Ausgrid in these situations to make safe will be temporary and must be rectified by the installing electrical contractor or ASP. A new notification form (and/or a CCEW or NOSW) must be submitted notifying Ausgrid that defects have been rectified.

During an inspection, if an electrical appliance, fitting or apparatus is found to present a high risk safety hazard to life, health or property, the equipment will be disconnected and a label attached indicating that the equipment is considered to be dangerous and must not be used until it is repaired.

The following are considered **MAJOR DEFECTS**:

- (a) Exposed live parts:
 - Exposed LIVE terminals on equipment that are accessible by unauthorised persons, without the use of a tool or key. This does not include vacant lampholders and fuse bases.
 - Exposed conductors of unterminated or damaged cables, which can be energised by the operation of a switch, circuit breaker or insertion of a fuse. This includes cables with open circuits, which cannot be readily located.
 - Bare aerial conductors in accessible positions without the use of a ladder.
 - (b) Earthing system:
 - Open circuit or high resistance from any point on the installation that is required to be earthed to the neutral conductor of the supply system.
 - Unearthed exposed metal, which is in an earthed situation.
 - (c) Insulation resistance:
 - Insulation resistance less than 1 Meg Ohm between the circuit conductors and between circuit conductors and earth on new circuits and 250,000 Ohms on other circuits (no appliances connected).
 - Insulation resistance less than 10,000 Ohms between live parts and earthed parts of appliances which incorporates a heating element.
 - Insulation resistance less than 1 Meg Ohm on other low voltage equipment.
- NOTE: The minimum safety requirement for insulation resistance between live conductors and earth is 1 Meg Ohm as per the current version of AS/NZS 3000 Wiring Rules.
- (d) Overloaded equipment:
 - Socket outlets, switches, switchboard equipment, cables and accessories operating in excess of 125% of current rating.
The current rating is determined by the maximum demand of the portion of installation or equipment supplied by the protective device, cable or accessory.
 - Appliances and cables, which may overheat to such an extent that serious damage or fire could be expected to occur or has occurred.
 - (e) Overcurrent protection:
 - No overcurrent (or RCD) device provided where required.
 - (f) Polarity:
 - Incorrect connection of active, neutral and earthing conductors at socket outlets, lampholders, switchboard equipment and appliances.
 - Isolating device not operating in active conductor(s).
 - (g) Unsuitable equipment:
 - Equipment exposed to the weather or other damp situation, which is not adequately protected against the direct ingress of water.
 - Electrical equipment installed in a hazardous area that does not meet the appropriate requirements of relevant Australian Standards current at the time of installation of that equipment.
 - Equipment used in an immediately dangerous manner.
 - Equipment installed for the supply of fire and smoke control equipment and lifts, which does not provide the required level of protection against fire and mechanical damage.
 - (h) Failed loop impedance.

MINOR DEFECTS are defects that are not considered to be Major Defects. These will be categorised under the section of the current version of AS/NZS 3000 Wiring Rules, Service and Installation Rules of NSW or Network Standard to which they are applicable.

NOTE: Ausgrid is required to ensure defective electrical installation and contestable work defects are rectified. It is illegal for a person to use any electrical installation or equipment which has been disconnected by Ausgrid due to defects until the defects have been rectified and Ausgrid notified on either a Certificate of Compliance - Electrical Work (CCEW) or Notification of Service Work (NOSW) form.

Failure to carry out the required tests is considered a Major defect.

(i) Contestable Work Defects and Safety Breaches.

ASPs should refer to Ausgrid publication ES4 – *Service Provider Authorisation* for further details concerning defects or safety breaches associated with contestable service and distribution work.

11.3 Reporting and follow up

Ausgrid will carry out the following procedures when defects are detected during an inspection. The defects may or may not be temporarily isolated, or disconnected. As stated above an entire installation may be immediately disconnected from Ausgrid's network if the defect can not be satisfactorily isolated.

- (a) Ausgrid Defect Notices will be left on site where appropriate. There will be one notice addressed to the customer and one addressed to the installing contractor or ASP. If the notices are not left on site they will be posted. The defects must be rectified within the time period specified on the defect notice.
- (b) If defects have not been rectified within specified period and Ausgrid has not approved an application to extend this period, a letter will be sent to the customer indicating the final date in which the work must be completed. Ausgrid may also send a letter to the Office of Fair Trading advising them of the matter.
- (c) If the defect has not been rectified by the final date indicated to the customer, a second letter will be sent to the customer specifying a date on which electricity supply to the premises will be disconnected if necessary. At this stage, if an electrical contractor or ASP is responsible for the defect, a letter **will** be sent to the Office of Fair Trading and corrective or disciplinary action taken.
- (d) On the disconnection date an Installation Inspector will visit the installation. If, at that time, the defects have not been fixed, or if the Installation Inspector is unable to gain access to the premises, the installation or the faulty portion of the installation will be disconnected without further notice. A re-inspection charge will apply for the reconnection.

NOTE: On large installations where inspection may take place over a period and where it is in the best interests of both parties, the Superintendent at the local Customer Operations office may make special arrangements.

Ausgrid's Customer Installation Safety Plan (CISP) and the Standard Form Customer Connection Contract provide further details of arrangements under which installations may be disconnected.

11.4 Breach of Law

If a person breaches any law applicable to the provision of electricity supply, electrical safety, electrical installation work or contestable work, Ausgrid may report that person to the appropriate authority or take legal action itself. Ausgrid may also disconnect the premises from the network. Such breaches occur for example where a person:

- (a) Carries out electrical installation work that does not comply with the current version of AS/NZS 3000 Wiring Rules or is not appropriately qualified.
- (b) Carries out contestable work without the required accreditation or authorisation.
- (c) Fails to notify Ausgrid after carrying out electrical installation work or contestable work as required.
- (d) Deceives or attempts to deceive any of Ausgrid's employees as to any fact, matter or thing relating to an electrical installation.
- (e) Makes a representation in any document in relation to any electrical installation, which they have supplied, that is false or misleading.
- (f) Tampered with or breaks the seal on any meter metering equipment or other sealed equipment under Ausgrid's control, without Ausgrid's written authorisation.
- (g) Connects an electrical installation to Ausgrid's network without Ausgrid's consent.
- (h) Connects an electrical installation, to any electricity supply main or service line in such a manner that the consumption of electricity by that installation is not metered or is metered at a tariff other than that which it is required to be.
- (i) Extends or connects an electrical installation to an electrical installation which is connected to Ausgrid's network without Ausgrid's consent.
- (j) Does not rectify defects found during an inspection and for which the person was responsible, within the required time.

12 Disconnection or Refusal to Connect

12.1 Reasons for refusal

Ausgrid may refuse to connect an installation or may disconnect an installation for breaches of the Standard Form Customer Connection Contract as permitted by the regulations and described more fully in the Contract. These include:

- if security is not provided as required or amounts owing under this contract with Ausgrid are not paid as required
- if Ausgrid's authorised officers are refused access or obstructed in carrying out their functions as permitted under the relevant legislation
- there is no longer a Customer Supply contract for the premises
- the retail supplier to the premises tells Ausgrid that under the Customer Supply Contract supply is to be discontinued.

The procedures to be followed before disconnection are detailed in the contract. Note however, that disconnection may occur immediately at any time, if a **MAJOR DEFECT** is identified that is considered dangerous to life, health or property as detailed in Section 9.

12.2 Disconnection and removal of unused mains

After a final electricity supply account has been issued, unless a new customer requests electricity supply within six months Ausgrid may disconnect a customer installation from Ausgrid's network, including if necessary removing any overhead service line to the customer's installation, removing all private attachments to our Network assets (e.g. poles) and recovering all our metering equipment.

Ausgrid may install stay wires or poles on private property if removing a service line would leave the consumers mains and/or poles without adequate support.

Any subsequent reconnection of a disconnected unused installation is customer funded contestable work and must be approved in advance by Ausgrid. The installation must comply with the relevant rules that apply at the time of reconnection.

12.3 Disconnection for safety

Ausgrid may in certain circumstances disconnect a section or the whole customers' installation due to immediate dangers associated with their electricity supply. This may involve isolating the supply at the customer's point of supply or at Ausgrid's street pole or underground pillar connection. This work can be completed by Ausgrid free of charge and arranged as an emergency service. Any reconnection once the appropriate repairs have been completed is a contestable function, and may be completed an Accredited Service Provider with the appropriate authorisation.

13 Dispute Resolution Procedures

A customer, as defined in Ausgrid's Standard Form Customer Connection Contract, may apply for a review of any of Ausgrid's decisions relating to any matter arising under that Contract or any other matter prescribed by the Electricity Supply (General) Regulation as amended from time to time. The process for this review is detailed in Attachment 3 of the Contract.

The following additional dispute resolution procedures are available to accredited service providers (ASPs) and electrical contractors for disputes arising from corrective or disciplinary actions taken by Ausgrid under the Ausgrid Service Provider Authorisation scheme (as detailed in publication ES 4) and/or Ausgrid's *Customer Installation Safety Plan*.

13.1 Initial consultation

If, after receiving an initial notification concerning an action or a requirement imposed by Ausgrid, the matter requires further clarification, it is suggested that initially an interview should be arranged with the Supervisor at the local Customer Service office to discuss the matter.

13.2 Internal review

If the matter results in a dispute, an appeal can be lodged by forwarding a written request for a review. The request should be lodged promptly (but no later than 28 days) after receiving the original notification from Ausgrid. It must state the reasons why the review is being requested. The request should be sent to:

- **(For matters associated with electrical contractors)** the local Customer Operations Area Manager or nominated representative. The Area Manager will then conduct an internal review of the matter and notify the appellant of his or her decision in writing within 14 days or a date agreed with the appellant. The Area Manager will also decide whether the original action taken by Ausgrid continues to apply during the dispute resolution process.
- **(For matters associated with accredited service providers ASPs)** the Manager – Installation Policy and Compliance or nominated representative. The Manager – Installation Policy and Compliance will then conduct an internal review of the matter and notify the appellant of his or her decision in writing within 14 days or a date agreed with the appellant. The Manager – Installation Policy and Compliance will also decide whether the original action taken by Ausgrid continues to apply during the dispute resolution process.

13.3 Alternative dispute resolution - mediation

If the dispute is not satisfactorily resolved through the internal review process, as a next step, the appellant may choose to participate in mediation. A request, in writing, for the appointment of a mediator must be sent to the local Customer Operations Area Manager (for electrical contractor matters) or the Manager Installation Policy and Compliance (for ASP matters promptly but no later than 14 days after receiving notification of the outcome of the internal review. The request must state the reason why the internal review was considered unsatisfactory.

The appointment of an independent qualified mediator will be by mutual agreement and all applicable mediation costs will be shared equally between Ausgrid and the appellant. Participation in mediation is voluntary and either the appellant or Ausgrid may withdraw from the process at any time.

The mediator will attempt to resolve the dispute through negotiation, consultation and collaboration. Ausgrid and the appellant will be bound by the outcome of the mediation process upon formal mutual acceptance of the outcome by both parties.

13.4 Arbitration

If agreement is not reached on the appointment of a suitable mediator, or either party refuses to participate in mediation at any time, or the outcome of the mediation process is unsatisfactory, the appellant may request that the dispute be resolved through arbitration.

A request for the dispute to be heard under arbitration must be made to Ausgrid in writing no later than:

- 28 days after the failure of the mediation process; or
- if mediation has not commenced, 42 days after the original notification by Ausgrid.

Arbitration will be conducted under the provisions of the Commercial Arbitration Act or as follows:

- (a) For matters concerning contestable work involving accredited or authorised service providers, Department of Trade and Investment, Regional Infrastructure and Services may appoint the arbitrator. A copy of request for arbitration must be sent to Ausgrid.
- (b) For matters concerning electrical installation work involving electrical contractors, the Office of Fair Trading may appoint the arbitrator. A copy of the request for arbitration must be sent to the Licensing Section of the Office of Fair Trading at the same time it is sent to Ausgrid.

The arbitrator will serve a written notice on either Ausgrid or the appellant as an outcome of the arbitration process. The decision of the arbitrator will be binding on both parties. The arbitrator will provide the reasons for the decision and, if the decision varies Ausgrid's original action, the manner in which the action is varied.

Initially, each party will be equally responsible for any preliminary costs required to initiate arbitration. The arbitrator at the end of the process shall determine the final allocation of costs to each or either party

14 Electrical Safety Inspections

14.1 General

The *Electricity (Consumer Safety) Act and Regulation* requires owners or controllers of electrical installations, to maintain their electrical installation to ensure that:

- the safe and satisfactory operation of the installation is not impaired by interference, damage, ageing or wear
- the live parts remain properly insulated or protected against inadvertent contact with any person
- the earthing system operates effectively
- the installation is not used in a manner that exceeds the operating limits imposed by its design or installation
- the installation does not become a significant potential cause of fire for the environment surrounding the installation.

Owners of installations in commercial premises are obligated under similar but more stringent requirements of the Occupational Health and Safety Act.

Ausgrid encourages customers to arrange regular safety checks of their electrical installation by a qualified person. Of particular concern is old wiring that has deteriorated and become unsafe. It is also advised that customers, purchasing existing premises, request an electrical safety check of the installation to ensure there is no faulty wiring due to deterioration or defective workmanship.

Where a safety check is requested by the owner, who is not the actual electricity customer, or by a prospective purchaser, the customer's permission must be given for the safety check prior to Ausgrid carrying out the work.

Electrical safety checks can also be arranged through Ausgrid's local Customer Operations office. Commercial rates will be charged for this service.

14.2 Maintenance of existing installations

(particularly with old and deteriorated equipment)

It is particularly important, where the installation is very old or deteriorated, resulting in for example high resistance connections, failed insulation or high risk of private aerial mains starting bush fires etc. that special attention be paid to the following aspects:

- service neutral links and the customer's active and neutral links
- (overhead) point of attachment including exposed consumers mains that are often prone to ultraviolet degradation
- structural integrity of private Pole A's (and other private poles)
- old hinged wooden switchboards
- obsolete service fuses
- old underground service termination boxes and old overhead mains connection boxes.
- 200-400 Amp Service Fuse cabinets. These cabinets are deemed obsolete and should be replaced at every opportunity.
- private aerial mains, particularly bare mains in bush fire prone areas.

The customer must arrange to carry out any necessary repair work to rectify any safety hazards that could cause fires and electric shocks.

It is also recommended that periodic operational checks be carried out of Residual Current Devices (RCDs) (safety switches) and circuit breakers (where installed), in accordance with manufacturer's recommendations and Australian Standards. As an approximate guide, circuit breakers should be checked every two years and RCDs every six months.

Note: Any identified potential safety hazards associated with Ausgrid's service mains, including fittings such overhead line strain clamps, should be referred to Ausgrid to enable any necessary repairs to be carried out.

14.3 Inspection and maintenance of all private aerial mains

- Customers will be given written notification of any installation defects Ausgrid becomes aware of during the conduct of its normal business operations or which may have been reported to Ausgrid.

Further information is contained in the Service and Installation Rules of NSW, AS/NZS 3000 Wiring Rules and the following Ausgrid publications:

- NS 166 Line Inspection
- NS 179 Vegetation Safety Clearances.

These Network Standards specify the following requirements:

- An annual visual inspection must be carried out for installations in bush fire prone areas (as defined in Ausgrid's Bush Fire Risk Management Plan) prior to the commencement of the bush fire danger season (as declared by the Rural Fire Service).
- A complete line inspection must be performed every four years and a complete pole inspection is required two years after each complete line inspection. Any safety breaches must be attended to promptly.
- The installation of approved spreaders on bare low voltage aerial mains (in bush fire prone areas), to minimise the risk of these mains starting a bush fire.
- The maintenance of required vegetation safety clearances from private aerial mains. Private poles should be inspected by a structural engineer to determine the residual strength of the structure, and re-inspected on their recommendation. Ausgrid's Network Standards can also be used for guidance.

Customers should refer to Ausgrid's Tree Safety Management Plan (available on Ausgrid's website) for guidance on how to maintain vegetation safety clearances. Ausgrid's website lists service providers authorised to carry out tree trimming in the vicinity of aerial mains.

Only suitably qualified electrical contractors can carry out low voltage spreader installation. Ausgrid can provide quotations for these services on request.

New, replacement and disused private aerial mains must not be connected or reconnected to the electricity supply unless they have been inspected and tested (including poles) by an electrical contractor and proven to be safe and compliant with the current AS/NZS 3000 Wiring Rules.

Ausgrid recommends that customers arrange for the removal of permanently disused private aerial mains from their premises.

15 Cable Locations

Ausgrid has a network of underground cables. These cables range from the normal house supply voltage for 240 volts to others up to 132,000 volts. Whether or not poles and overhead wires exist in the local area, it is quite possible that there are underground cables at your work site.

If you do any sort of excavation you should be aware that interfering with underground cables could result in danger to yourself and people nearby. Damage to cables can cause loss of supply to Ausgrid customers and can be costly to repair.

Before carrying out any earthworks or excavations it is important that you check the location of underground services, including electricity mains that may be in or near the area you are working.



Dial Before You Dig – Australia-wide
Call 1100 – free call (except from mobiles)

Dial Before You Dig is an important community service that can help you avoid damaging one of Australia's most precious and valuable assets – our underground cables and pipes.

A unique partnership has been formed between Australia's major service providers in order to help protect our underground lifelines – including our communications, gas, water and electricity.

This means that if you are planning any excavations you only need call one number for information on underground service plans for any location AUSTRALIA WIDE.

So please, protect your community's lifelines. Dial 1100 before you dig.

When do I need to call 1100?

When planning an excavation it is vital to make Dial Before You Dig part of the process.

Call 1100 well in advance of any actual digging work as you may find that you need to make adjustments to your excavation plans in order to prevent **cable or pipe damage**.

NOTE: Where excavation works are to be carried out near cables in an area where property boundaries or aids to cable location are lost or unclear, the person responsible for the excavation work must engage cable locating services or surveyors when digging within close proximity to the cables. The location of the cables shall be marked and hand excavation used until the cables are located.

What do I need to know when dialing 1100?

When calling 1100 be ready to provide the operator with:

- your name and address
- name of company (if applicable)
- contact telephone number
- fax number for return information
- contact name on site
- site address and both nearest cross streets
- start date of proposed work
- type of work being carried out.

Within two days you will receive plans of relevant underground services.

If there is anything you are not sure of, please call the relevant utility direct before proceeding with any digging or excavating.

For further information on underground pipes and cables and their locations, simply dial 1100 or you can request plans from their website www.dialbeforeyoudig.com.au

16 Overhead Powerlines

Before starting to plan any work on a building site it is important to identify and be aware of any potential electrical hazards that may impact on the work.

Overhead power lines can be present in several forms of construction having bare, covered, insulated or insulated and screened conductors. Electrical accidents can be caused by the unintended contact with power lines, for example accidental contact during the erection of scaffolding, guttering and building frames. They can also present a hazard to construction vehicles and plant operating at the construction site.

All overhead powerlines and cables must be treated as potentially dangerous electrical hazards during a building site risk assessment.

The NSW WorkCover Authority document *Work near Overhead Powerlines* aims to protect the health and safety of persons from the risks arising when they are working near overhead power lines and associated electrical apparatus. It provides practical advice on implementing the requirements of the Occupational Health and Safety Act 2000 and the Occupational Health and Safety Regulation 2001. If the construction is in our network area and the required clearances cannot be adhered to during construction you must contact Ausgrid for further advice.

Phone 13 15 35.

17 Electricity Metering Locking System

Ausgrid has introduced a restricted Electricity Metering (EM) locking system for installations in its network area. The locking system replaces the NMB and Frost locking systems that were previously issued to customers who require locks on their meter boxes and enclosures. These locks permit access by the customer and authorised Ausgrid staff.

Existing NMB and Frost locks previously installed on customers' properties will not need to be replaced. All new sites, requiring Ausgrid master keyed locks, will now require the installation of the EM locking system.

The EM locking system uses Abloy Protec locks that are available as padlocks, commercial and residential cylinders and key safes. All Master keys are protected by world-wide patents and cannot be duplicated without the correct authorisation. Superior master-keying possibilities are also available.

All EM locks can also be keyed to allow access by all or any of the following utilities:

- Sydney Water
- Hunter Water
- Telstra
- AGL.

With a full range of locking options, the EM locking system can be used for many purposes such as securing meter boxes, entry gates, building entries, meter rooms and enclosures. The EM locking system is a cost-effective way of providing access without the cost of moving electricity meters.

The full range of EM locking options, including master keying and multi-utility access, is available from Integrity Locksmiths & Security. For all residential, commercial and trade inquiries call the EM Call Centre at Integrity Locksmiths on **1300 664 582**.

Do you need a cost effective restricted locking SYSTEM FOR YOUR ELECTRICITY METERS

Abloy Protec Locks are:

- Durable
- Pick Resistant
- Protected by worldwide patents

For enquiries please call **1300 664 582** the EM Call Centre at Integrity Locksmiths & Security

EnergyAustralia

Appendix A – Application for Connection and Supplementary Application for Connection

APPLICATION FOR CONNECTION



To be completed in BLOCK LETTERS by the electrical contractor or agent, on behalf of the customer.
 A Site Establishment Fee as detailed in ES5 may apply to this installation. You will be notified if a Site Establishment Fee applies to this installation when your Job Number is issued. The Site Establishment Fee is charged when the Notification of Service Work is received.

Fax Sydney and Tuggerah (02) 43998007
 Email to: ea.datanorth@ausgrid.com.au
 Fax Local Call (Not to be used for Muswellbrook) 1300 662 089
 Fax Muswellbrook (02) 65429 037
 Email to ea.datamuswellbrook@ausgrid.com.au

RETAILER	NMI

INSTALLATION ADDRESS

Property Name				Pole/Pillar ID			
Floor	Unit	Street	Lot/RMB	Existing Meter ID			
Street							
Nearest Cross Street							
Suburb				Postcode			
Office Use Only							
Job Number							
Site Establishment Fee to be applied							<input type="checkbox"/>

CUSTOMER AND POSTAL ADDRESS

First Name (or Company Name)					Phone		
Last Name					Mobile		
Floor	Unit	Street No	PO Box	Street			
Street (cont)			Suburb			Postcode	

ELECTRICAL CONTRACTOR/AUTHORISED SERVICE PROVIDER

Electrical Contractor Name		Licence Number	Contact Phone Number
Authorised Service Provider Name		Licence Number	Contact Phone Number
Email Address (Preferred Option of Returning Job Number)			Fax Number
E/C or ASP Postal Address			

SERVICE, DEMAND AND LOAD DETAILS (please tick)

Connection Type New <input type="checkbox"/> Alteration <input type="checkbox"/> Upgrade <input type="checkbox"/> Separation <input type="checkbox"/> Amalgamation <input type="checkbox"/> Grid Connected Generation System <input type="checkbox"/>	Service Type Overhead <input type="checkbox"/> Underground <input type="checkbox"/> UGOH <input type="checkbox"/> Off Pole Transformer <input type="checkbox"/> Upgrade to TOU <input type="checkbox"/> Y	Service Size 100A <input type="checkbox"/> 200A <input type="checkbox"/> 400A <input type="checkbox"/> Other..... A	Number of Installations Single Installation <input type="checkbox"/> Multiple Installation <input type="checkbox"/> Number of House Services <input type="text"/> Number of Units <input type="text"/>	Premise Type Domestic <input type="checkbox"/> Torrens <input type="checkbox"/> Strata Commercial <input type="checkbox"/> Builders Service Perm <input type="checkbox"/> Special Small Service (Indicate type of SSS below) <input type="checkbox"/> Other.....	Supplementary AFC If the installation is one of the following types you must also complete and attach the Supplementary Application for Connection. New electrical work over 20kW <input type="checkbox"/> Services greater than 100 Amps <input type="checkbox"/> CT metered installations (CT Metering Form MUST be submitted) <input type="checkbox"/> New HV installations and those requiring more than 100 Amps of additional load <input type="checkbox"/> Multiple living unit developments (more than six units) <input type="checkbox"/> Installations located in rural or outlying areas <input type="checkbox"/> Work where the proposed equipment may cause excessive fluctuation of voltage (eg welders, x-ray machines) <input type="checkbox"/> Equipment > 75A per phase (Power Quality Form MUST be submitted) <input type="checkbox"/> Grid Connected Generation System <input type="checkbox"/>
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Calculated Maximum Demand in Each Phase (Amps)
 A B C
 Proposed Service Length
 Existing Existing Service Rating

Details of Job: _____

Print Name Signature Date Issued July 2011 A.191

SUPPLEMENTARY



APPLICATION FOR CONNECTION

To be lodged with the Application for Connection. Refer to document ES1.

FAX
Tuggerah (02) 43998007
Email to
ea.datanorth@ausgrid.com.au
Free Call 1300 662089
(Not to be used for Muswellbrook)
Muswellbrook (02) 65429037
Email to
ea.datamuswellbrook@ausgrid.com.au

This form is required for:

- New electrical work over 20kW (Part A, B, C);
- Multiple living unit developments (more than 6 units) (Part A, B, C);
- For services greater than 100 Amps (Part A, B, C);
- CT metered installations. **NOTE: The installation WILL NOT be energised unless all the information required on the CT Metering form has been provided and processed (Clause 4.5 of ES1).** (Part A, B, C);
- Rural or outlying areas (Part A, B & C);
- New HV installations and those requiring more than 100kW or additional load (Part A, B, C, D);
- Work where the proposed equipment may cause excessive distortion, fluctuation or unbalance of voltage (Part A, B, C, D);
- All new and altered Solar Grid Connected generation installations (Part A, E)
- All other new and altered Grid Connected generation Installations (Part A, C, E)

Please complete this form in **BLOCK LETTERS**.

PART A INSTALLATION ADDRESS

Property Name			
Floor	Unit	Street No.	RMB/Lot
Street	Suburb		
Cross Street	Existing Meter ID		Pole Pillar ID

PART B INSTALLATION LOAD DETAILS

Residential Portion	
No living units:	_____
No of bedrooms per unit:	_____
Gas hot water (yes/no):	_____
Lift(s) and start current:	_____
Car park ventilation current rating:	_____
Air conditioning (yes/no):	_____
Air conditioning rating:	_____
Commercial Portion	
Total floor area with air/con:	_____ m ²
Total office floor area without air/con:	_____ m ²
Car park floor area:	_____ m ²
Warehouse floor area:	_____ m ²
Commercial areas for food handling (yes/no):	_____
Industrial Portion	
Number of factory units:	_____
Total floor area of all factory units:	_____ m ²

PART C DIAGRAM

Part D – Power Quality. Attach Power Quality Assessment form if any of the following are proposed:

Variable Speed Drives, switched-mode power supplies or other rectifiers > 75A per phase	<input type="checkbox"/>
Motors exceeding the limits set out in the Service and Installation Rules of NSW	<input type="checkbox"/>
Arc furnaces, welders or harmonic filters	<input type="checkbox"/>
Unbalanced loads (Phase-Phase connected or single phase > 75A)	<input type="checkbox"/>
Power Factor Correction capacitor banks	<input type="checkbox"/>
Other voltage distorting or fluctuating equipment > 75 per phase, or installation with a large deployment of computer servers or IT equipment	<input type="checkbox"/>
High Voltage Connections	<input type="checkbox"/>

Part E- Grid Connected Generation Systems. Full details of any Grid Connected Generation Systems (Refer to Section 8 of the Service & Installation Rules of NSW)

Make/Model:		_____	
Inverter Details			
Size of Inverter: (Nominal Rating)	kW	Is Inverter an Approved Type? (CEC)	
No. of Phases:	1 <input type="checkbox"/> 3 <input type="checkbox"/>	YES <input type="checkbox"/>	
No. of Inverters:		NO <input type="checkbox"/> If No, Attach Certificate of Suitability	
Total kW's to be Connected (Single Phase)	kW's	CEC Accredited Installer Number	
		Solar Panel Details	Other Generator details (Wind etc.)
Note: The Metering Configuration must be Net Metering		Number _____	Type _____
The installation must be: -		Total Rating _____ kW	Total Rating _____ kW
a) Designed and installed by a CEC accredited person			
b) Comply with all CEC guidelines			

Part F - Additional Comments

A.277 issued July 2011

Appendix B – CT Metering Form

EMAIL to: nemsrpop@ausgrid.com.au
or FAX to: 02 9277 3560



Ten days minimum notice is required from the submission of this form

Site and Customer details for installations requiring CT Metering

It is a prerequisite that this form be submitted to the above fax or email address for the connection of supply to sites requiring 100 amps or greater. A separate form is required for each CT connection point.

Detailed Installation address:	
Address variables: (<i>cnr - upstairs - west - rear, etc</i>):	
NMI No:	Installation or Job No:
Site Load description: (<i>CT Ratio & detail major appliances eg Air Con</i>):	

ELECTRICAL CONTRACTOR DETAILS

Electrical Contractor Licence No. and Email:	EC Phone & Email:
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DETAILS OF ALL METERS TO BE REMOVED IF UPGRADING AN EXISTING SITE

List all Meter numbers to be removed:	
Name of Meter Provider removing meters:	Date to be removed:

RETAILER AND METER PROVIDER DETAILS

Electrical Retailer (<i>Seller of Electricity</i>):	
Retailer contact if contract in place:	Phone:
Metering Supplier installing new meters:	Date requested for Inspection & Metering:

DETAILS AND SIGNATURE OF CUSTOMER REQUESTING ELECTRICITY CONNECTION

Electricity Customer's Name:	Customer's ABN No:
Customer's Signature:	Date Signed:
Printed Name of Signatory	Phone Numbers:
Position in Company:	Email or Fax:
Customer's Postal Address for Accounts:	

OFFICE USE ONLY

Inspection Appointment date:	Time:	Service Order No:
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IMPORTANT NOTICE: By signing this form the Customer certifies to Ausgrid Network the accuracy of all details provided including correct identification of the Meter Provider, Contractor and Retailer as stipulated in ES1 Clause 4.4

A. 359 Issued: July 2011

Appendix C – Power Quality Assessment Form

POWER QUALITY ASSESSMENT

This form is required if ANY piece of Low Voltage equipment has a rating of greater than 75A per phase or any High Voltage Connection Application.



List ALL proposed / expected equipment in the installation that may result in voltage fluctuations or distortion.

NOTE: The installation WILL NOT be energised unless all the information required on this form has been provided and processed.

Submit in conjunction with an Application for Connection or as requested by Ausgrid

Please complete this form in BLOCK LETTERS.

PART A INSTALLATION ADDRESS

Property Name

Floor

Unit

Street No.

RMB/Lot

Street

Suburb

Cross Street

Existing Meter ID

Pole Pillar ID

PART B INSTALLATION NON LINEAR/ FLUCTUATION LOAD DETAILS

Description	kVA/kW	Amp	Number of operations/hr	Design Standard	Mitigation Measures
DISTORTING LOADS					
1 Phase capacitor-filtered or conventional rectifier					
3 Phase 6-pulse capacitor filtered rectifier / Variable Speed Drives					
3 Phase 6 pulse capacitor filtered rectifier with series inductor > 3% or DC drive / VSD					
3 Phase 6 pulse inductor filtered rectifier / VSD					
3 Phase 12 pulse rectifier / VSD					
AC voltage regulator					
Variable voltage variable frequency (VVVF) Drive					
Switch mode power supplies					
Power Factor Correction					
Unknown					
FLUCTUATING LOADS					
Rating of the largest motor					
Rating of the second largest motor					
Rating of other frequently fluctuating loads:					
Other:					
SPECIAL EQUIPMENT					
X-Ray or Magnetic Resonance Imaging Devices					
Welding plant rating					
Arc furnaces rating					
Unbalanced loads (e.g PH-N / PH-PH loads)					
Other:					
TOTAL APPARENT POWER RATING					

PART C REFERENCES TO SIMILAR INSTALLATIONS OR COMMENTS

A.365 July 2011