

# EVOENERGY REQUIREMENTS FOR GAS CENTRALISED HOT WATER SYSTEM

Effective Date: 04/04/2016

# Table of contents

1. Purpose	3
2. References	3
3. Overview	3
4. Definitions	4
4.1. Contact	4
5. Hot water service metering requirements	5
5.1. General Requirements	5
5.2. System Design	5
5.3. Pipework Design	5
5.4. Metering Purpose	6
5.5. Standard Metering Configurations	6
5.5.1. Individual Apartments	6
5.5.2. Central Hot Water System	6
5.6. System Performance	6
5.7. Meter Locations	7
5.7.1. Individual Apartment Hot Water Meters	7
5.7.2. Master Cold Water Meter for Central Hot Water System	7
5.7.3. Master Gas Meter for Central Hot Water System	8
5.7.4. Prohibited Locations	8
5.8. Alternative Locations	8
5.9. Meter Identification	8
5.10. Meter Orientation	8
5.11. Meter Supports	8
5.12. Meter Handling	9
5.13. Meter Sizes & Clearances	9
5.13.1. Individual Apartment Meters	9
5.13.2. Centralised Hot Water Meters	9
5.14. Remote Metering Facilities	9
5.15. System Certification	10
5.16. Maintenance	10

# 1. Purpose

This document provides guidance to hydraulic designers; building developers; and plumber/gasfitters about designing and certifying energy efficient gas centralised hot water systems for residential dwellings. It is the responsibility of the designer to assess the individual site, installation and usage characteristics in defining the appropriate design criteria that best matches the intended duty of the centralised hot water system. It is the responsibility of the building developer to certify that the centralised hot water system has been installed in accordance with the certified design.

## 2. References

These requirements do not take precedence over any statutory codes nor building standards and must be read in conjunction with all relevant building codes and plumbing and gas fitting standards. In particular the following standards & references:

- AS 5601-2013 (including Amendment 1:2015)
  - Gas Installations
- AS/NZS 3500 - National Plumbing and Drainage
  - Part 4 (2015) – Heated Water Services
  - Part 5 (2012) – Domestic Installations
- Building Code of Australia
- ACT Gas Service & Installation Rules (6 June 2014)
- Installation of Plumbing Australia Related Jemena Guides and Documents:
- JDG-003 Design Guide For Gas Centralised Hot Water Systems

## 3. Overview

Gas hot water can be supplied to multiple dwellings through either individual gas storage or gas instantaneous hot water systems in each apartment, or else through a gas centralised hot water system (**GCHWS**).

A *gas centralised hot water system* has several advantages over individual gas hot water systems including:

- less space requirement (and possibly better aesthetics because there are no hot water appliances visible on balconies)
- lower installation cost and maintenance costs, and
- more adaptable to energy saving methods.

## 4. Definitions

The Act	The <i>Utilities (Technical Regulation) Act 2014</i>
customer	<ul style="list-style-type: none"> <li>a <b>person</b> to whom the service is provided under a <b>customer contract</b>, or</li> <li>a <b>person</b> who has applied, orally or in writing, to the relevant utility for the service to be provided under a <b>customer contract</b>.</li> </ul>
DBYD	<ul style="list-style-type: none"> <li><b>Dial Before You Dig</b></li> </ul>
Evoenergy	Jemena Networks (ACT) Pty Ltd (ABN 24 008 552 663) and Icon Distribution Investments Limited (ABN 83 073 025 224) t/as Evoenergy (ABN 76 670 568 688), being the gas distributor in the Australian Capital Territory. For the purpose of these Design Requirements For Gas Centralised Hot Water Systems, this definition includes Evoenergy's approved representative: Jemena Asset Management Pty Ltd (ABN 53 086 013 461).
EWP	Elevated Working Platform
gas connection	<b>gas connection</b> means a physical link between a distribution pipeline and a point of supply to allow the flow of natural gas.
gas distributor	<ul style="list-style-type: none"> <li>a utility licensed for the distribution of gas through a gas network; or</li> <li>in relation to a gas connection service for premises— a utility licensed to provide the service for the premises.</li> </ul> <p><b>Evoenergy</b> is the <i>gas distributor</i> in the Australian Capital Territory.</p>
GCHWS	<b>Gas Centralised Hot Water System</b>
GS&I Rules	The <b>Gas Service and Installation Rules</b> issued by <b>Evoenergy</b> under the requirements of the Act Gas Service & Installation Rules Code which is empowered under the <i>Utilities (Technical Regulation) Act 2014 (the Act)</i> .
meter	A device or other apparatus used for measuring and recording the consumption of gas.
meter set	<p><i>meter set</i> means a <i>gas meter</i>, and other ancillary equipment used for measuring and regulating the gas pressure; or</p> <p>installed <i>metering equipment</i> that may be kit-based or prefabricated. Kit-based sets are installed on a meter bar whereas prefabricated sets are mounted on an independent support frame.</p>
person	Person includes a natural person, a firm, an unincorporated association or a body corporate.

### 4.1. Contact

Gas Customer Services can be accessed by ringing 1300 405 727. There are then the following options:

- For gas emergencies
- Billing or account enquiries
- Assistance in identifying Network components or DBYD enquiries
- Move Network components including meters
- New Connections
- Licensed plumbers/gasfitter requiring technical advice
- Other – Customer service.

Web: [evoenergy.com.au](http://evoenergy.com.au) Web: [www.environment.act.gov.au/energy](http://www.environment.act.gov.au/energy)

## 5. Hot water service metering requirements

### 5.1. General Requirements

All work carried out to install or replace all or any part of centralised hot water metering equipment must be in accordance with AS/NZ 3500 (Plumbing Code), any other applicable Australian Standard; and this guide.

Any person installing or replacing all or any part of centralised hot water metering equipment owned or managed by Evoenergy, where the work is not being done on behalf of **Evoenergy**, must obtain Evoenergy's authorisation before undertaking the work.

### 5.2. System Design

Typically hot water services installed within medium density and high rise residential buildings fall into two basic categories, described as follows:

- **Centralised Systems** – whereby hot water is generated centrally for all apartments by equipment that is owned and maintained by a body corporate or similar entity and is individually hot water metered.
- **Individual Systems** – whereby hot water is generated independently for each apartment by equipment that is wholly owned and maintained by the owner of that apartment and is individually gas metered.

The decision with regard to which type of system should be adopted for any given development needs to take account of a number of factors including:

- The number of apartments to be served.
- The available space within the building to install hot water plant.
- The available space within the building to install hot water pipework and equipment.
- Client specific requirements.

### 5.3. Pipework Design

Hot water pipework systems installed within medium density and high rise residential buildings fall into two basic categories, described as follows:

- **Centralised Systems** – whereby the hot water pipework system is installed in a manner that allows hot water to be constantly circulated from the hot water plant, throughout the building and back to the hot water plant where the water is reheated to regain heat losses accumulated throughout the system during the water circulation. This type of pipework design is most often referred to as a flow and return pipework system.
- **Individual Systems** – whereby hot water pipework is installed in a manner that allows hot water to be supplied directly from the apartment hot water appliance to the individual fixtures and tap ware, without any opportunity for circulation. This type of pipework design is referred to as a dead-leg system because the hot water after leaving the hot water appliance does not recirculate back to the appliance.

Traditionally the type of pipework system utilised within a building has been dependent upon the type of hot water system design that has been employed, with circulating systems favoured for centralised hot water systems and dead-leg systems favoured for individual hot water systems.

## 5.4. Metering Purpose

Ideally hot water metering within residential apartments is required to measure the consumption of two valuable resources:

- Water
- Natural Gas

Individual apartment hot water metering is provided by **Evoenergy** for flow and return centralised hot water systems. The purpose of this metering is to provide a ratio of comparison between the various apartments that can be applied to accurately apportion the total energy cost of the hot water plant within the building to each apartment.

## 5.5. Standard Metering Configurations

Evoenergy will provide the metering equipment for the configuration specified below. The metering configuration will be based on the appliance and application type.

### 5.5.1. Individual Apartments

Evoenergy will provide a single hot water meter for each individual apartment to meter hot water consumption within that apartment. This type of metering is required for centralised hot water systems only.

### 5.5.2. Central Hot Water System

Evoenergy will provide a master cold water inlet meter and a master gas meter for each central hot water plant so that a total water consumption and the total gas consumption of the central hot water plant can be compared and validated against the total water consumption of the individual apartment hot water meters supplied by the central hot water plant.

## 5.6. System Performance

**Evoenergy** reserves the right to set minimum energy efficiency performance standards for proposed centralised hot water systems.

The efficiency of various centralised hot water systems shall be measured by the “**Common Factor**” method as described within Jemena’s “*JDG-003 Design Guide for Gas Centralised Hot Water Systems*” available at <https://jemena.com.au/documents/gas/design-guide-for-gas-centralised-hot-water-systems.aspx>

Any tempering of water temperature after the individual hot water meters shall draw water downstream of the master cold water meter. This ensures that the integrity of the common factor calculation is maintained to verify system performance,

i.e. tempering before the hot water meter is **not** allowed.

## 5.7. Meter Locations

### 5.7.1. Individual Apartment Hot Water Meters

Hot water meters for individual apartments **must** be located within common areas of the development, generally as close as practicable to the point of use to reduce the length of dead-leg pipework required downstream of the meter to supply hot water to the individual apartment. Individual apartment meters may be located individually in the common area or in groups at a central location.

Metering locations shall comply with the following requirements:

1. Be in a location compliant with plumbing standards for maximum length of dead-leg pipework.
2. Be readily accessible and allow unimpeded access for maintenance and meter reading.
3. Be compliant with the "Safe Work Australia's Code of Practice" where three points of contact can be maintained and tools can be operated safely with one hand.
4. Be in a location to cut off the individual customer for account and/or safety purposes.
5. Be located at a height between 150mm and 3000mm above floor level (to the top of metering equipment).
6. Have safe access for Elevated Working Platforms (EWP) within the common area.
7. Access opening to be a minimum of 600x600mm for each hot water meter if housed in the ceiling.
8. Be in a location that is not exposed to physical damage.
9. Be in a location that is dry and well ventilated.
10. Be in a location that minimises the impact of water leakage.

Note: The location of individual apartment meters within dwellings is not permitted.

### 5.7.2. Master Cold Water Meter for Central Hot Water System

Master cold water meters (including associated filters, valves and non-return valves) not supplied by Evoenergy for central hot water plants must be located within accessible areas of the development, generally as close as practicable to the hot water plant to achieve the most cost effective installation. These areas must not be accessed via a ladder or other types of similar apparatus.

Metering locations shall comply with the following requirements:

1. Be accessible and allow unimpeded access for maintenance and meter reading.
2. Be located at a height between 150mm and 1700mm above floor level (to the top of metering equipment).
3. Be in a location that is not exposed to physical damage.
4. Be in a location that is dry and well ventilated.
5. Be in a location that minimises the impact of water leakage.

### **5.7.3. Master Gas Meter for Central Hot Water System**

Master gas meters must be installed as per the ACT **GS&I Rules**.

### **5.7.4. Prohibited Locations**

Hot Water Meters for individual appliances (e.g. Central Laundry Facility) must not be located in any of the following locations:

1. A lift shaft or motor room.
2. A fire isolated passageway or fire stair.
3. In a position that would obstruct egress from a building.
4. In a position that is exposed to sudden or excessive temperature variations.
5. In an area of excessive vibration.
6. In the foundation area under a building.
7. In a position where the access for maintenance and meter reading is restricted.
8. On the ground, or a floor which is frequently wetted or on a floor which contains material which may corrode the meter.

### **5.8. Alternative Locations**

Other alternative metering locations may be approved at the discretion of Evoenergy. Any such approvals will be subject to written application to Evoenergy, for assessment on a site by site basis.

### **5.9. Meter Identification**

Each hot water meter shall be identified by clear permanent markings that indicate the dwelling or building service that is being supplied by the meter. Pipework shall be similarly labelled on the outlet side of the meter.

### **5.10. Meter Orientation**

Each hot water meter must be installed and orientated in accordance with the manufacturer's specifications to ensure the accurate measurement of water consumption.

Each meter must be orientated to ensure that the meter register display can be easily read for commissioning, audits and manual meter reads.

### **5.11. Meter Supports**

Hot water meters must be securely supported by the connecting pipework and rigid metal meter connections, and be clear of the ground or base. Connecting pipework must not put any strain on the meter.



## **5.12. Meter Handling**

When transporting, storing, moving, installing or changing meters, the following procedures must be observed:

1. Handle with care to prevent damage, place carefully and do not drop
2. Cap or seal the meter inlet and outlet connections from the atmosphere
3. Prevent contamination by liquids or solids
4. Install in accordance with relevant instructions and requirements of the manufacturer
5. Secure to prevent loss or theft

## **5.13. Meter Sizes & Clearances**

### **5.13.1. Individual Apartment Meters**

Individual apartment hot water meters shall be installed in the common area with the following minimum clearances:

- 150mm clear below the base of the meter to the floor.
- 150mm clear between meters and/or adjacent walls or objects horizontally.
- 150mm clear between meters and/or adjacent wall or objects vertically.
- Maximum mounting height 3000mm (to the top of metering equipment).

Evoenergy reserves the right to alter hot water meter suppliers and specifications without notice.

### **5.13.2. Centralised Hot Water Meters**

Generally, spatial requirements for centralised hot water meters shall be advised by Evoenergy on a project by project basis after the submission of loads for the connected equipment have been assessed by Evoenergy.

Centralised hot water meters shall be installed with the following minimum clearances:

- 150mm clear below the base of the meter to the floor.
- 150mm clear between meters and/or adjacent walls objects horizontally.
- 150mm clear between meters and/or adjacent walls or objects vertically.
- Maximum mounting height 3000mm (to the top of metering equipment).

Evoenergy reserve the right to alter hot water meter suppliers and specifications without notice.

## **5.14. Remote Metering Facilities**

Remote metering facilities enable Evoenergy to obtain metering and billing data through an electronic transfer of information from the site. Remote metering facilities will be required for all medium density and high rise residential developments.

Remotely metered developments will require the installation of:

- Meter data loggers (MDL's provided by Evoenergy) required to measure and record the individual gas and water meter usages on-site.
- A dedicated telephone line to the remote metering facility for the physical transfer of electronic information between the metering facility and Evoenergy billing systems (initial line and connection to be provided by the developer).
- Inter-connecting cabling for power supply and data transfer from the remote meters to the MDL's must be identified by clear permanent markings that indicate the dwelling or building service that is being supplied (to be provided by the developer).

### **5.15. System Certification**

Evoenergy will not supply metering equipment for a centralised hot water system until it receives certification from an appropriately qualified and competent party, confirming the system has been designed to meet the specified minimum energy efficiency performance requirements, and a certification from the building developer confirming that the certified design has been installed.

Evoenergy is not liable for and will seek indemnification from developers for installations that do not meet the minimum specification or designs which may adversely impact on the consumer.

Applicants are referred to Jemena's AGD-003 Design Guide For Centralised Hot Water Systems, which contains detailed information in regard to the procedures and applications that are required to be submitted to Evoenergy for Centralised Hot Water System approval including:

- Clause 6 - System Certification
- Clause 6.1 - Certifier Qualifications and Competency
- Clause 6.2 - Certification of Generalised Common Factor

The submission of this information does not place any onus on Evoenergy to connect natural gas or provide what has been requested in the submission. Once this information has been correctly provided, an offer for the supply of natural gas may be issued to the developer.

### **5.16. Maintenance**

The maintenance of hot water meters will be provided by Evoenergy. Associated pipework and equipment shall be maintained as required by the building owner, body corporate, or their agent.

It will be the building owner, body corporate, or their agent's responsibility to ensure unimpeded access to the building at the request of Evoenergy, for repairs, replacement, realignments of hot water meters with MDL or disconnection due to non-payment of bills by the consumer.

# evoenergy.com.au

## General enquiries

13 23 86

## Emergencies and faults

13 10 93 – Electricity

13 19 09 – Natural gas

## Language assistance

13 14 50 – 24 hours

如果您需要幫助，請打電話給下面的號碼。

¿Necesita un intérprete? Llame al número indicado abajo.

هل تحتاج إلى مترجم؟ اتصل بالرقم أدناه.

Trebate li pomoć tumača? Nazovite niže navedeni broj.

Nếu quý vị cần sự giúp đỡ, vui lòng gọi số bên dưới.

Se vi serve un interprete, telefonate al seguente numero.

Αν χρειάζεστε διερμηνέα, τηλεφωνείτε στον αριθμό παρακάτω.

Jemena Networks (ACT) Pty Ltd (ABN 24 008 552 663) and Icon Distribution Investments Limited (ABN 83 073 025 224) t/as Evoenergy (ABN 76 670 568 688).