

***IGEM/GL/9 Edition 2
Communication 1806***

Guidance for Large Gas users in dealing with natural gas supply emergencies



*Founded 1863
Royal Charter 1929
Patron: Her Majesty the Queen*



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SECTION 1 : INTRODUCTION

1.1 This Guidance provides advice for Large Gas users of the actions they should take during a natural gas supply emergency. It provides an insight into the potential reasons for the cessation of gas supplies to Large Gas users, in particular industrial gas users and the actions necessary to be taken in an emergency, how to plan for such an event, and how the impacts can be minimised.

1.2 A natural gas "supply emergency" is defined by Regulation 2(1) of the Gas Safety (Management) Regulations 1996 (GS(M)R) as "an emergency endangering persons and arising from a loss of pressure in the network or any part thereof". A supply emergency therefore describes a state where a dangerous situation exists.

A natural gas supply emergency is any situation which has resulted in, or could result in, a loss of pressure to consumers.

A Network Gas Supply Emergency (NGSE) occurs where there is an imbalance of supply and demand for gas in National Grid's National Transmission System (NTS) (the Primary System). This can be caused by insufficient gas being available to meet demand, or, by equipment damage or failure on the NTS.

A Local Gas Supply Emergency (LGSE) occurs where there is an imbalance of supply and demand for gas on a GDN's network (the Secondary System). This is typically caused by damage or failure to part of the GDN's network.

1.3 If a natural gas supply emergency occurs or is likely to occur then the local gas distribution network operator has a duty under their GS(M)R Safety Case to manage the network to ensure the risks from the dangerous situation are minimised.

1.4 The gas distribution network operators have Gas Supply Emergency Procedures in place that describe the arrangements and processes to prevent a dangerous occurrence, these include instructions for Large Gas users to stop using gas immediately to safeguard the network and to limit disruption to smaller consumers, for whom turning off the gas supply would be potentially dangerous.

1.5 IGE/GL/9 aims to give simple advice to large natural gas consumers on how they should plan and take action safely to ensure their gas supplies are shut down safely and quickly, when directed to do so.

The IGE/GL/9 document has been prepared in conjunction with the Health and Safety Executive, the gas network operators and industry experts including large gas consumers, and in conjunction with the Department for Business, Energy and Industrial Strategy (BEIS), Office of Gas and Electricity Markets (Ofgem), the Energy Emergency Executive Committee (E3C) and the Network Emergency Coordinator (NEC).

1.6 Minimising the impacts of potential natural gas supply emergencies requires the co-operation of everyone in the industry. Through working together, detailed planning and the provision of up-to-date quality contact information and communication channels, and the relevant employees having the competence and authority to act, gas supply network emergencies can be managed and their impacts minimised. This is a vital part of the industry emergency process for reducing demand on the gas network quickly and safely.

With appropriate contingency planning, gas consumers may avoid being exposed to greater costs and commercial risks than would otherwise be expected.

- 1.7 Site occupiers will also have safety responsibilities under other safety legislation such as the Health and Safety at Work Act and the Provision and Use of Work Equipment Regulations. This publication does not cover all the safety issues arising from such legislation. However, the need for competent persons, planning and safe procedures is of paramount importance.
- 1.8 When a direction to cease consumption is received then the user should act quickly and safely. The Large Gas user will be contacted by the gas transporter as soon as there is a requirement for gas use to be stopped. It is a criminal offence for the person receiving the direction to knowingly fail to comply with such a direction. The direction to stop using gas may be sent by email, phone, fax, or in person on site.
- 1.9 This Standard makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.9:
- the terms "must" identifies a requirement by law in Great Britain (GB) at the time of publication
 - the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
 - the term "should" prescribes a requirement which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.
- 1.10 The primary responsibility for compliance with legal duties rests with the employer. The fact that certain employees, for example "responsible engineers", are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers must:
- have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by "responsible engineers"
 - have done everything to ensure, so far as is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
 - have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review
 - not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is beyond their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this, they should refer the matter for higher review.
- 1.11 Notwithstanding Sub-Section 1.7, this Standard does not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for modification of this Standard. Amendments to this Standard will be issued when necessary and their publication will be announced in the Journal of IGEM and other publications as appropriate.
- 1.12 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, may be addressed to Technical Services, IGEM, IGEM House, High Street, Kegworth, Derbyshire, DE74 2DA, and will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not imply

acceptance of any liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

1.13 This Standard was published in January 2018.

SECTION 2 : SCOPE

2.1 This Guidance provides advice for those Large Gas users of natural gas who may be directed to cease the use of Natural Gas in the event of a gas supply emergency, and therefore should know their responsibilities and actions to be taken should the eventuality arise.

2.2 This Guidance does not address any supply cessation issues that are associated with any contractual arrangements (between users and their gas shipper/supplier) for an interruptible supply except that some or all of the technical guidance will be applicable.

This Guidance is provided to ensure Large Gas users understand their responsibilities and to enable them to prepare company and local site specific plans to act quickly.

2.3 For the gas industry participants and the UK gas supply chain overview (see Appendix 3).

SECTION 3 : LEGISLATION

3.1 PRIMARY LEGISLATION

3.1.1 Health and Safety at Work Act (HSWA)

HSWA applies to all persons involved with work activities, including employers, the self-employed, employees, designers, manufacturers, suppliers, etc. as well as the owners of premises. It places general duties on such people to ensure, so far as is reasonably practicable, the health, safety and welfare of employees and the health and safety of members of the public, who may be affected by the work activity.

3.2 SECONDARY LEGISLATION

3.2.1 Gas Safety (Management) Regulations (GS(M)R)

GS(M)R place specific duties on gas transporters (GTs), or their emergency service providers (ESPs), for dealing with gas escapes from pipes on their networks. Their primary duty is to make the situation safe. They are responsible not only for dealing with escapes from their own pipes, but also for dealing with escapes from gas fittings supplied with gas from pipes on their network. In GS(M)R, the term "gas escapes" includes escapes or emissions of carbon monoxide (CO) from gas fittings.

3.2.2 Provision and Use of Work Equipment Regulations (PUWER)

The Regulations define work equipment as being any machinery, appliance, apparatus, tool or installation for use at work. Examples include spanners, wrenches, welding torches, ladders, lifting equipment and building services in common parts of a building.

The Regulations place duties on employers in relation to selection, suitability, maintenance, inspection, installation, instruction and training, prevention of danger and control of equipment.

3.2.3 Gas Safety (Installation and Use) Regulations (GS(I&U)R)

3.2.3.1 GS(I&U)R are relevant statutory provisions of HSWA setting out general and detailed requirements dealing with the safe installation, maintenance and use of gas systems, including gas fittings, appliances and flues.

Note: GS(I&U)R do not apply to certain premises (see L56 Guidance Notes 2(3) (8). However, where they do not apply, the principles of GS(I&U)R need to be applied, notwithstanding that the requirement for Gas Safe registration (see clause 3.8.4) need not be applied.

3.2.3.2 GS(I&U)R addresses both NG and LPG.

3.2.3.3 GS(I&U)R place responsibilities on those installing, servicing, maintaining or repairing gas appliances, pipework etc. as well as suppliers and users of gas.

3.2.3.4 GS(I&U)R define the gas supplier for both NG and LPG. L56 provides guidance on those definitions, in particular for the more complicated case of LPG supplied from storage vessels and from cylinders.

3.2.3.5 GS(I&U)R define the type of work that requires persons carrying out such work, or their employers, to be an "approved class of person", for example be on the Gas Safe register.

3.2.4

MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS (MHSWR)

Linked closely with specific duties under GS(I&U)R, MHSWR impose a duty on employers and the self-employed to make assessments of risks to the health and safety of employees, and non-employees affected by their work. They also require effective planning and review of protective measures.

SECTION 4 : PLANNING FOR CESSATION OF GAS SUPPLY

4.1 CAUSES OF CESSATION OF GAS SUPPLY

The need for the cessation of supplies to users of natural gas may be caused by a number of factors, although the probability is very low, they are usually unplanned events therefore it is important that prompt and immediate action is taken if directed to do so to safeguard the network and prevent a dangerous occurrence. Some of the causes include:

- damage to, or failure of, the local gas supply network or failure of part of the national transmission system
- insufficient supplies to meet gas demand.

In such cases, Large Gas users may be required to implement immediate or phased cessation of their gas supply.

There may be occasions where the user suspects a failure of the gas supply network before being contacted by the gas transporter, or shipper or supplier. In such cases, the appliances should immediately be turned off and the Emergency Service Provider contacted via 0800 111 999. (In Northern Ireland 0800 002 001). Where immediate shutdown of complex plant is not possible then it should be shut down as soon as possible.

Large users will usually be directed to cease using gas ahead of priority users and domestic users.

Note: The proximity of a Large Gas user's premises to a network terminal does not imply that gas supply will be secure under emergency conditions.

4.2 RESPONSIBILITIES

The Gas Safety (Management) Regulations allow gas transporter(s) to direct any consumer to stop using gas when necessary, to prevent a natural gas supply emergency from spreading. In the event of such an emergency, it is vital that Large Gas users stop using gas as soon as can be safely achieved, to limit the disruption to smaller consumers and to safeguard the network.

Under any of the above circumstances, the user may be contacted by the gas transporter, or shipper or supplier acting on the transporter's behalf, and directed to cease using gas. Users are required by law to comply with this direction. If a user fails to comply with the direction to cease using gas and the gas transporter attends to isolate the user's supply, this will normally be done at the Emergency Control Valve (ECV) (at the primary meter).

The user's co-operation with the gas transporter in an emergency is vital if the safety of the gas supply network is to be assured.

4.3 OBLIGATIONS AND PLANNING FOR CESSATION OF GAS SUPPLY

Under the contract between the consumers and their gas supplier it is a requirement that the consumer provides and maintains accurate emergency contact information. It is the responsibility of the consumer to inform their gas supplier of any changes to the emergency contact information.

There are a number of practical and important steps which the user should take in planning for a cessation of their gas supply:

- assess the risks to site and business continuity due to the cessation of gas supplies

- establish who is the gas transporter, gas shipper and gas supplier and adopt a rigorous procedure to ensure their details are kept up-to-date.

Note: Details of the gas transporter and supplier are shown on the gas supply invoice. The gas supplier will have details of the relevant gas shipper.

- prepare a company and local operating plan for when a direction to cease using gas is received, including the availability/operability of existing alternative site energy sources, and potential damage to plant or processes e.g. caused by freezing of water systems
- identify the emergency contact in the company and Large Gas user premises who must be in a position to accept the direction themselves from the gas transporter and be able to arrange for all affected premises to cease using gas. If the emergency contact is unable to act upon the direction themselves, they must know who to contact to ensure the site stops using gas. The emergency numbers must not be directed to an answering machine.

It is vital that up-to-date details for 24 hr/365 days contacts are supplied to the gas supplier. It may be more convenient to provide the emergency contact title e.g. Duty Engineers, Works Manager etc.

- ensure that competent resources are always available to cease the use of gas as directed
- ensure that competent resources are available for the restoration of gas systems and the start-up of associated plant and equipment when the gas supply emergency has finished.

Note: Other Large Gas users may be similarly affected and, therefore, if the required competency to restore gas supplies is not available "in-house", it is worth bearing in mind that the services of specialised contractors may be stretched at this time.

- on a regular basis, establish and test the procedures for the controlled shut-down and start-up (re-commissioning) of plant and equipment. Refer to Section 5 for details of important considerations when establishing these procedures.

The gas transporters perform Gas Supply Emergency exercises, and during these you may be asked to participate. During these exercises, the contact details provided by the Large Gas user via the gas supplier are tested by the gas transporter. The results of these exercises including the ability of the person contacted at the Large Gas user's premises to stop using gas are reported to the HSE. During an exercise it will be clearly stated and the Large Gas user is not to actually stop using gas, but use it as an opportunity to test their company/local procedures.

- The persons, (usually the gas transporter) who have directed you to stop using gas will be the same for providing information that the gas supply emergency has finished.

SECTION 5 : SHUTTING DOWN PLANT AND EQUIPMENT

- 5.1 When a direction to cease consumption is received, then the user must act quickly and safely, it is a criminal offence for the person receiving the direction to knowingly fail to comply with such a direction. The gas transporter will contact the Large Gas user as soon as there is a requirement for gas to be stopped being used. The direction to stop using gas is usually via a phone call, and followed up in writing via an email, in exceptional circumstances it may be in person.

The "Large Gas users" local plan and procedure should detail where and how gas should be ceased being used. It is usually best to try and do this by shutting down gas appliances (plant and equipment) rather than turning off the gas at the ECV (at the primary meter) or at other section isolation valves. The primary consideration is to cease using gas as quickly as possible whilst maintaining safety of the Large Gas user's pipework by maintaining a positive gas pressure i.e. greater than atmospheric pressure, within their pipework system.

Turning off the supply at the ECV or at any other section isolation valve may lead to the complete loss of pressure within the installation pipework downstream of that valve. This may also lead to the inability to ignite alternative fuels (see Note 1 of clause 5.2) and require purging, testing and commissioning upon resumption of supply. These activities could involve considerable expense and delay. Furthermore, in some cases, the steps to re-commission will require a written procedure and the use of appropriate purge gas. There will also be a need for staff with the appropriate level of competence to perform the procedure, to test and purge the system.

- 5.2 If the user has the ability to use alternative fuels, it is important to ensure that all associated equipment can be readily switched to the alternative fuel at short notice.

Note 1: It may be necessary to have either a standby LPG or bottled Natural Gas supply for the ignition system.

Note 2: In a gas supply emergency, little or no advance notice may be given of the cessation of gas supply, so it is important to remember that adequate standby fuel storage or heated oil systems may be needed to permit rapid changeover to oil firing at any time and not just under peak winter conditions.

SECTION 6 : RE-STARTING EQUIPMENT UPON RESTORATION OF GAS SUPPLY

When the gas supply emergency is finished, you will be notified by the gas transporter.

6.1 GAS SUPPLY LOCALLY ISOLATED AT APPLIANCES

If appliances are isolated at their local isolation valve, it should be possible to light the appliances one at a time. Check in each case that they appear to be operating correctly.

Site staff should understand and be sufficiently competent to attempt to relight appliances. They should also have the operating and fault finding instructions to hand. If there is any doubt about the staff competency or if appliances do not appear to be operating correctly, seek assistance from a competent person such as the manufacturer/servicing agent.

6.2 GAS SUPPLY ISOLATED AT THE EMERGENCY CONTROL VALVE OR SECTION ISOLATION VALVES

In this instance, it is essential to first apply a test for gas tightness of the existing pipework system in accordance with IGE/UP/1 or IGE/UP/1A before purging takes place.

This must be performed by persons holding the appropriate competency and, for commercial premises, those who are registered as a Member of a Class of Persons (currently Gas Safe).

Note: For information on competency, see IGEM/IG/1 ref.

SECTION 7 : FURTHER HELP

IGEM has a wide range of Utilisation Procedures that may be of assistance. For more information visit the website on www.igem.org.uk.

IGEM also has available a list of Consultants with expertise in most fields of gas supply and utilization, to assist consumers of gas in meeting their obligations and ensuring the safety of their systems. For more information visit the website on www.igem.org.uk.

APPENDIX 1 : GLOSSARY, ACRONYMS AND ABBREVIATIONS

A1.1 GLOSSARY

All definitions are given in IGE/G/4 which is freely available by downloading a printable version from IGE's website www.igem.org.uk.

A1.2 ACRONYMS AND ABBREVIATIONS

BEIS	Department for Business, Energy and Industrial Strategy
CO	carbon monoxide
ECV	emergency control valve
E3C	Energy Emergency Executive Committee
ESP	emergency service providers
GDN	Gas Distribution Networks
GSMR	Gas Safety (Management) Regulations
GT	gas transporter
HSE	Health & Safety Executive
HSWA	Health and Safety at Work Act
IGEM	Institute of Gas Engineers and Managers
LGSE	Local Gas Supply Emergency
LPG	liquefied petroleum gas
NEC	Network Emergency Coordinator
NGSE	Network Gas Supply Emergency
NTS	National Transmission System
Ofgem	Office of Gas and Electricity Markets (Ofgem)
UK	United Kingdom.
VLDMC	Very Large Daily Metered Consumer

APPENDIX 2 : REFERENCES

This Standard is set out against a background of Legislation in force in GB at the time of publication. Similar considerations are likely to apply in other countries where reference to appropriate national Legislation is necessary. The following list is not exhaustive.

Where British Standards etc. are quoted, equivalent national or international Standards etc. equally may be appropriate.

A2.1 LEGISLATION IN GREAT BRITAIN

This sub-appendix lists Legislation referred to in this Standard as well as Legislation not referenced but which may be applicable.

- Gas Safety (Management) Regulations 1996.
- Health and Safety at Work Act (HSWA)
- Provision and Use of Work Equipment Regulations (PUWER)
- Management of Health and Safety At Work Regulations (MHSWR)
- Gas Safety (Installation and Use) Regulations (GS(I&U)R)

A2.2 IGEN STANDARDS

- IGE/UP/1 Edition 2 RWA Strength and tightness testing and direct purging of industrial and commercial gas installations
- IGE/UP/1A Edition 2 RWA Strength and tightness testing and direct purging of small low pressure industrial and commercial gas installations
- IGEM/IG/1 Standards of training in gas work
- IGEM/G/4 Definitions for the gas industry

APPENDIX 3 : THE UK GAS SUPPLY CHAIN OVERVIEW

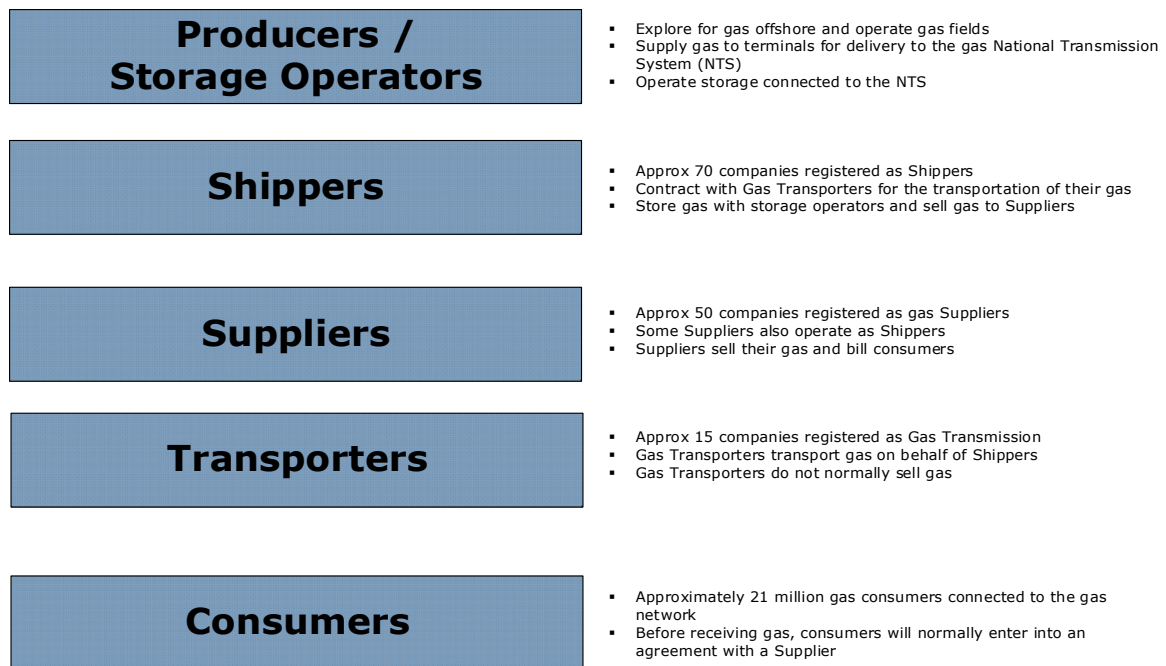


FIGURE 1 - GAS INDUSTRY KEY PLAYERS DEFINITIONS

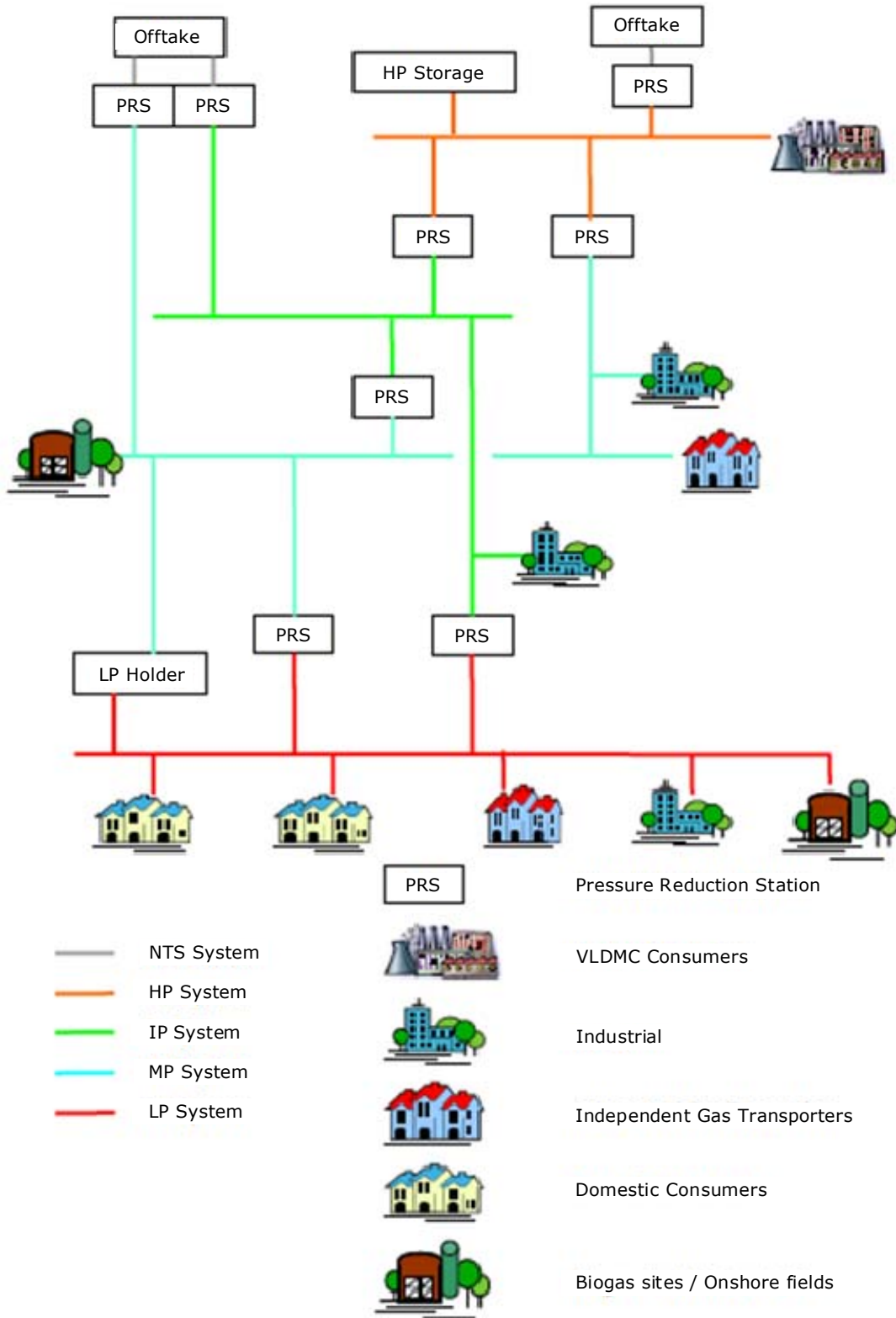


FIGURE 2 - THE UK GAS SUPPLY CHAIN OVERVIEW

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