

CALOR

NON CONFIDENTIAL VERSION

**COMPETITION COMMISSION INQUIRY INTO THE MARKET FOR THE
SUPPLY OF DOMESTIC BULK LIQUEFIED PETROLEUM GAS**

**MAIN SUBMISSION OF CALOR GAS LIMITED TO THE COMPETITION
COMMISSION**

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EXECUTIVE SUMMARY

- 1 This submission is made in support of the responses that have already been made by Calor [*confidential information*]

Supply of Domestic Bulk LPG

- 2 Calor operates an integrated supply system, and therefore takes complete responsibility for the supply of LPG from the refinery or terminal to the storage tanks which Calor owns and which are located on domestic customers' premises.
- 3 In this way, Calor can be confident of:
 - the quality of the product at all stages of the supply chain;
 - the security of transport and delivery; and
 - the condition of the tank and installation at domestic customers' premises.
- 4 In Calor's view, an integrated supply system produces significant economic advantages to the ultimate benefit of the customer. In particular:
 - it ensures the most efficient usage of Calor's supply vehicles, assets and other resources which allows effective cost control;
 - it allows for the safe and efficient maintenance of the domestic bulk tank population;
 - it ensures that all elements of the integrated supply system are regulated within the scope of Calor's "Quality System" which complies with ISO 9002, as independently audited by B.S.I.;
 - it gives Calor the ability to forecast customer demand which in turn facilitates advance LPG purchasing arrangements and other cost control measures which in turn lead to price smoothing for customers;
 - it eliminates the need for substantial up front capital investment by customers in providing or replacing dedicated storage; and
 - in Calor's case, it has facilitated the provision of comprehensive public liability insurance at minimal cost to customers.

In addition, an integrated supply system improves supply logistics which are of direct benefit to customers because this:

- facilitates timely deliveries to anticipate and manage times of peak demand;
- facilitates an “auto top up” system which minimises LPG run outs;
- facilitates the installation of new technology (telemetry being the most recent example) that enables customers to benefit from the latest technological developments in the industry;
- ensures that there is wide availability of LPG; and
- enables a supplier to have a rationalised support infrastructure.

In summary, an integrated system provides the greatest possible security of supply and efficiency as the responsibility for supply, storage, service and distribution rests unequivocally with the supplier and not with the domestic bulk customer, who has no means of discharging that responsibility.

Safety

- 5 This integrated supply from refinery or terminal to tank is an integral and crucial part of Calor’s safety management system. It unambiguously places responsibility for the safety of all aspects of the operation, from beginning to end, upon a single supplier equipped and resourced to fulfil it. The system is designed to ensure a safe product for domestic use, a safe system of work for Calor’s employees and contractors and, through those, containment of risk to third parties and property.
- 6 Calor has an excellent safety record. Safety is Calor’s paramount consideration in supplying LPG – a hazardous product – to customers. That safety record is, in Calor’s view, largely due to the operation of an integrated supply system. This system provides Calor with full knowledge of the history of the gas supply, tanks and related equipment. It also ensures practical compliance with all legal requirements in relation to product safety and product liability and a safe system of working and enables Calor to provide its comprehensive public liability insurance cover.

Competition and Market Development

- 7 Calor competes with approximately 30 domestic bulk LPG suppliers throughout the UK for existing and new customers. In addition Calor faces strong competition from other fuels, especially heating oil, mainly in relation to domestic customers who wish to install a new central heating system. LPG is assisted by its environmental advantages, as supported by the government, (eg through the climate change levy).
- 8 *[Confidential Information]* Competition between suppliers in the LPG domestic bulk market is fierce. Examples include Flogas UK Limited and BP Gas, both of whom entered and expanded into the market in the 1980s, especially by deliberately targeting existing Calor domestic bulk customers. British Gas entered the market in

the 1990s with a similar strategy. Calor also refers to *[Confidential Information]* for a description of competition between bulk LPG and fuel oil.

- 9 *[Confidential Information]* Calor closely monitors the market prices offered by its competitors and responds to competitor price pressure. *[Confidential Information]*

Switching

- 10 Calor does not consider that there are significant barriers to customer switching. In particular:

- Calor's domestic bulk customers are entitled to switch suppliers without penalty under clearly stated conditions;
- customers bear only a modest direct cost in relation to tank removal and installation;
- *[Confidential Information]* Calor believes that *[Confidential Information]* this reflects the fact that it has satisfied customers and maintains competitive prices; and
- Information about other sources of bulk LPG is readily available to all domestic customers at little or no cost.

Profitability

- 11 Calor strives to operate as efficiently as possible, whilst providing a high level of service to customers. Calor has achieved significant operational cost savings, *[Confidential Information]* at the same time as improving the level of service provided to its customers through investment in technology and systems such as telemetry.
- 12 Calor aims to earn a sustainable and competitive economic return on its activities, including domestic bulk LPG. The average return on capital employed for Calor's domestic bulk business over the period 1999-2003 was in line with the weighted average cost of capital.

Summary

- 13 **Calor believes that the domestic bulk market operates in the interests of the customer. Switching is easy and inexpensive. Competition is intense and even ignoring other fuels offers customers good choice. Customers are to the greatest extent possible protected from the uncertainties of the international LPG market. Above all, the integrated supply system model gives significant safety, logistical and economic benefits to domestic customers which would not otherwise be available.**

CALOR GAS LIMITED

- 1 Calor is a dedicated LPG supplier and distributor. It started business in 1935. It was the first supplier and distributor of LPG in the UK. Calor's first business was in the sale of LPG in cylinders and commenced in Salisbury with the incorporation of Calor (Distributing) Co. Limited. The business expanded quickly as customers in rural areas realised the benefits of this new versatile fuel and within the first 12 months it had developed and grown into a national business. *[Confidential Information]*.
- 2 Calor is now part of a Dutch privately owned group of companies, SHV Nederland NV ("SHV") being the ultimate holding company. Calor's business is an important part of SHV's Gas Division which includes other LPG suppliers operating in 23 countries including Ireland,¹ France, Spain, Germany, Belgium, Holland, Denmark, Austria, Hungary, Italy, Brazil, China and Turkey. Details of Calor's UK group structure were sent to the Competition Commission in the off-the-shelf information submitted by Calor.
- 3 Calor's business can be summarised as falling into the following categories:

Cylinder;

Commercial Bulk;

Domestic Bulk;

Autogas;

Calor Transport;²

Aerosol propellants ("CAP");³ and

Refrigerants ("CARE").⁴
- 4 Calor also has 50% shareholdings in two joint venture companies, Autogas Limited (with Shell Gas Limited) and CalorForce Limited (with Connaught plc)⁵. Autogas Limited is a distributor and supplier of autogas to petrol/autogas filling stations on main auto routes. CalorForce Limited provides nationwide LPG fitting and maintenance and repair services (including emergency cover) for Calor's and other customers.

¹ For clarification, SHV's operations in Northern Ireland are carried out by Calor Gas Northern Ireland Limited *[Confidential Information]*.

² On 31 January 2005 Calor announced that it intended to close down its Calor Transport business in the summer of 2005;

³ On 31 January 2005 Calor announced that it had sold its CAP and CARE businesses to BOC on 28 January 2005.

⁴ On 31 January 2005 Calor announced that it had sold its CAP and CARE businesses to BOC on 28 January 2005.

⁵ On 1 February 2005 Calor purchased all of Connaught Plc's shareholding in CalorForce Limited which became a wholly owned subsidiary company of Calor.

- 5 Calor's subsidiary company, Budget Gas Limited ("BG"), operates largely independently from Calor. (With reference to this LPG domestic bulk market inquiry, BG has submitted separate responses to the Information Request and the Finance and Accounting Request. Details of its business operations are contained in those responses.) In summary, BG was acquired by Calor in 2000. *[Confidential Information]* It is based in Telford, Shropshire, and carries on LPG cylinder and bulk supply businesses. Its area of operation is the West Midlands (where it also operates under the trade name Britagas) and Wales where it operates under the trade name West Wales Gas. It has one filling plant in Telford and two depots in Llandyssul and Haverfordwest.
- 6 Calor sells LPG in cylinders (propane and butane) through its *[Confidential Information]* dealers, *[Confidential Information]* Calor Centres, *[Confidential Information]* It supplies LPG (propane) to its bulk customers directly from its *[Confidential Information]* Customer Operations Centres ("COCs"), break-bulk depots and from oil refineries.
- 7 Calor's organisation is structured on a functional basis: Sales and Marketing; Operations; Finance; HR, and IT. Details of its structure are set out in **Appendix 1**.
- 8 Calor started selling bulk LPG in 1955, at that time exclusively to commercial and industrial customers The domestic bulk business started in 1981. There had been significant pressure from potential customers who were then currently using oil but looking for a fuel that did not have the polluting image associated with oil. Calor had resisted entering this market due to the potential large investment required and the projected low litreage per customer, which combined to make the domestic market a high risk venture. Eventually, in 1981, Calor decided to enter into this market and during the following two years gradually made the domestic bulk tank available nationally and this led to a boom in householders choosing to install LPG. Until 1987 the price of heating oil (pence per litre) was comparable with LPG but at this time the heating oil raw material price collapsed to around half that of LPG.
- 9 When Calor first started to market domestic central heating actively it used its established systems and processes which had been developed for a traditional business-to-business operation. *[Confidential Information]* Up to this point bulk LPG tanks had always been white, but due to adverse customer reaction they were made available in sage green enabling them to blend in more with customers' gardens. This was a major technical challenge due to the higher heat absorption properties of darker colours resulting in the development of higher pressures in the tank and the need to re-engineer accordingly. This style of tank was a first in the UK, but demonstrated an early response to customer needs.

LIQUEFIED PETROLEUM GAS (LPG)

- 10 LPG consists primarily of a mixture of light hydrocarbons, namely propane, normal- and iso-butane with some unsaturated hydrocarbons. It is available in two commercial forms, namely commercial butane and commercial propane.
- 11 A full technical description of LPG and its properties is attached at **Appendix 2**.
- 12 In terms of energy, one tonne of propane, an amount typical of that stored in a domestic bulk tank, contains 1957 litres of liquid propane which provides enough energy to run a typical boiler for up to half a year.
- 13 The constituent parts of LPG are produced in two ways in the UK; either in petroleum refineries as the light end fractions of distillation and cracking processes, or during North Sea oil and gas production (as natural gas liquids from crude oil production and the purification of natural gas).
- 14 For the UK LPG market, the deposits of crude oil under the North Sea on the UK Continental Shelf (UKCS) and in the Middle East, especially around the Arabian Gulf are the most important. Approximately 75% of the UK's crude oil originates from the UKCS and 25% from the Middle East. Most of the LPG is produced as the light end fraction from crude oil distillation. LPG is also produced from secondary processing such as catalytic cracking and hydrocracking.
- 15 As well as being produced in the refinery, LPG components can be physically separated from the natural gas liquids extracted with oil and natural gas in onshore terminals and gas separation plants. The natural gas liquids are further fractionated and purified to produce LPG. The majority of LPG produced in this way originates from the UKCS oil and gas fields.
- 16 Once produced in the refinery or transported from onshore terminals, unless delivered direct to customers LPG must be stored prior to distribution. The distribution of LPG involves a number of stages. Firstly the LPG must be loaded from large bulk pressurised or refrigerated storage vessels into large road tankers and transported to cylinder filling plants and/or break bulk storage, (which may be on the same site) from which the LPG is transported by smaller tankers to customers' storage tanks. All these operations are carried out in pressure vessels with the LPG being transported at ambient temperature and under pressure.
- 17 LPG is classed as a Dangerous Substance, (see **Appendix 2**) and is highly volatile and, as mentioned in paragraph 12 above, is of high energy content. Since LPG must be pressurised, the storage, handling, transport and dispensing equipment is generally heavy, elaborate and expensive. In addition, LPG is a fire and explosion hazard [*Confidential Information*]. Because of these factors, there are stringent safety standards that have to be met. These standards are laid out in legislation, industry codes of practice and associated British and European Standards. For further details, please

see the analysis previously supplied. The use of dedicated pressure vessels also has the advantage of controlling spillage and evaporative losses.

- 18 LPG is an extremely versatile fuel which can be used for much the same purposes as natural gas. The most common application for domestic bulk LPG is for central heating and hot water. This is because it is only at this level of consumption that a bulk supply makes any economic or logistical sense. The one exception to this is an Aga which also consumes sufficient energy to make a bulk LPG supply a viable option. For lower consumption applications, such as cooking or gas fires, cylinders are more suitable.
- 19 Customers do of course use LPG in other ways and they may also draw these from their bulk supply. In 2003 Calor conducted a survey on gas usage through its domestic central heating customer magazine “Country Views”. The responses* broke down as follows:
- Heating & cooking *[Confidential Information]*
 - Heating only *[Confidential Information]*
 - Cooking (e.g. AGAs) *[Confidential Information]*
 - Fires *[Confidential Information]*
 - Unknown *[Confidential Information]*

[Confidential Information]

- 20 It has also been used as a substitute for electricity where this is not available e.g. for lighting, or CHP (combined heat and power). *[Confidential Information]*.
- 21 Domestic customers currently have a choice of conventional fuels to provide heating, hot water and cooking requirements, namely; oil, solid fuel, electricity and LPG. Of these alternatives LPG is universally considered to be the most environmentally sensitive, both from an emissions and ground pollution point of view. This is evidenced in the Government’s treatment of LPG under the Climate Change Levy where the taxable rate per litre is set at less than the other fuels to reduce the undesired effect of customers switching to more environmentally damaging fuels.

DOMESTIC BULK LPG

Average Consumption

- 22 Historically, a typical domestic bulk customer, using LPG for heating and cooking, consumes approximately 1.6 Tonnes of LPG per year (3,130 litres), with approximately *[Confidential Information]* of customers consuming between 1,500 and 3,500 litres per year. The average consumption of Calor’s domestic bulk customers during 2003 is shown in figure 1 below

[Confidential Information]

Figure 1: Number of Domestic Bulk customers by consumption level

23 There are many factors affecting a domestic bulk customer’s level of consumption, including:

- The ambient temperature and impact of “wind chill”;
- The length of periods of cold weather;
- Boiler use and thermostat settings (consumers’ temperature preference);
- The level of house occupancy;
- The number and heat capacity of LPG appliances in use; and
- The energy efficiency of the property.

Seasonality of Demand for Domestic Bulk LPG

24 Calor’s domestic bulk business is mainly driven by heating demand. As a result, the timing of customer demand for deliveries of LPG is heavily weighted around the traditional heating season (October through to March) and is mainly influenced by changes in the weather. Calor’s standard measure for heating related weather movements is the “Degree Day”, as supplied by the Meteorological Office (a factor based on the time the average temperature is below 15.5°C). Figure 2 below displays the number of Degree Days recorded for each month of 2002 and 2003.

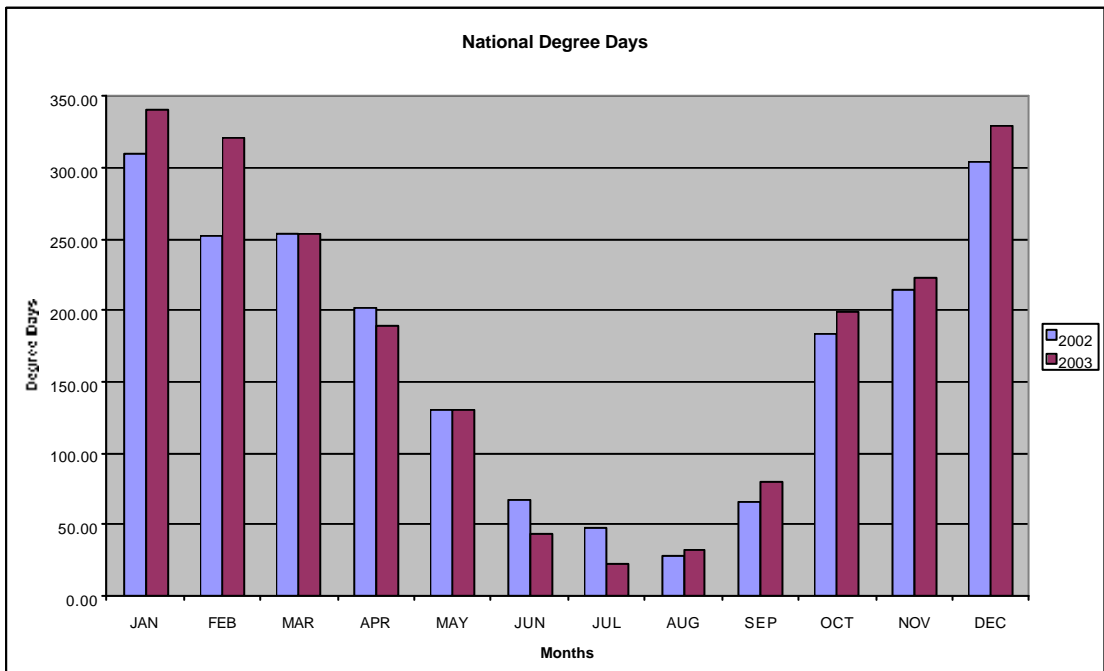


Figure 2: National Degree Days by month for 2002 and 2003

- 25 The seasonality of the heating season is fairly consistent, as can be seen in figure 2. In 2003 January and February were slightly colder on average than in 2002. Calor's domestic bulk LPG volumes for the same period are shown in figure 3 below which highlights the seasonality of demand as well as the rough correlation with Degree Days.

[Confidential Information].

Figure 3: Domestic bulk consumption by month for 2002 and 2003

- 26 The profile of consumption does vary from that of Degree Days as the size of customer storage, timing of cold periods and the scheduling of deliveries all impact on the timing of delivery (see figure 4 below).

[Confidential Information].

Figure 4: Deliveries to domestic bulk customers in 2003

- 27 *[Confidential Information]*

- 28 *[Confidential Information]* Future deliveries can then be scheduled to help optimise Calor's distribution whilst ensuring that the customer does not run out of LPG.

- 29 This is a key economic factor in utilising vehicles. *[Confidential Information]*. These are specialised LPG tankers designed for access to domestic premises and cost between £85,000 and £110,000 each. To the best of Calor's knowledge, such vehicles are not available for hire. It is also not economically viable to use the vehicles for other purposes or other industries. The graph in **Appendix 3** shows the utilisation profile of vehicles used by an oil transport company through the year and when compared with the utilisation of LPG vehicles highlights a competitive disadvantage suffered by LPG suppliers because of the seasonality of demand for LPG.

- 30 Calor's infrastructure is geared up to handle the forecasted demands from *[Confidential Information]* domestic bulk customers. This covers the order staff, the telephone lines, the delivery vehicles and all other areas of customer interface. *[Confidential Information]*

- 31 The current development of the integrated distribution system is of the result of an LPG supplier fulfilling customer needs by reinforcing the provision of a safe and secure supply of LPG with the minimum of fuss or inconvenience for the customer. *[Confidential Information]* It also allows Calor to operate the bulk vehicle fleet more efficiently, and as this is a major operational constraint in winter, there are many benefits including improved delivery times, run outs being virtually eliminated and further potential cost savings being achieved.

- 32 As shown above [*Confidential Information*], significant economic benefits are enjoyed by Calor and its customers as a result of established relationships between them in terms of efficiency in distribution.

SATISFYING DOMESTIC CUSTOMERS' NEEDS

- 33 Each year Calor invests heavily in understanding and acting upon the needs of customers [*Confidential Information*]. The main method used to understand the needs of Calor's domestic customers is continuous research on satisfaction and advocacy levels (the extent to which customers would recommend Calor to other people).

- 34 The research has been conducted on Calor's behalf by an independent market research organisation since 2000. It has enabled Calor to determine relevant initiatives for domestic bulk central heating customers and more importantly to determine the effectiveness of initiatives deployed.

- 35 As a result of the initial stage of exploratory qualitative research, five salient factors were identified by domestic bulk customers as being significant in their on-going relationship with Calor. These were:

[Confidential Information].

- 36 In association with the research company, Calor was able to frame a questionnaire that could be used as part of a much broader and pertinent domestic bulk customer satisfaction quantitative study. This resulted in a full and detailed insight into all aspects of the customer relationship.

- 37 *[Confidential Information]*.

Customer Feedback

- 38 The charts at the end of this paragraph show the level of satisfaction and advocacy amongst domestic bulk customers tracked over the past five year period. 2000 scores were at very respectable levels [*Confidential Information*]. Whilst 2001 proved to show disappointing results in comparison with 2000 levels, 2000 levels were achieved again in 2002, with 2003 and 2004 proving that Calor can provide good customer service on a consistent basis and that the domestic bulk customer base is generally satisfied. Calor firmly believes that the improvement in satisfaction results is a result of the initiatives taken following the research results.

To take a few examples:

- Safety

Calor has focussed not only on the vitally important safety systems (see paragraphs 65 to 71 below and **Appendix 2**) but also on the customer

interface. The research and customer contact has shown that the customer places safety as a high priority, but that this is something for which they are very happy to be able to rely on a professional gas supplier rather than cover for themselves.

[Confidential Information].

- Pricing

Please refer to paragraphs 42 to 52 below for a fuller account of the Company's response to customer concerns on pricing.

- Gas Delivery (Security of Supply)

Examples of Calor's response to customer priorities are the investment in *[Confidential Information]* computer systems to ensure the most efficient supply *[Confidential Information]*. This satisfies the requirement of a significant majority of domestic bulk customers for peace of mind and the ability to rely on their gas supply being available at all times through reliance on automatic top-up.

- Customer Service

The move away from a centralised call centre to *[Confidential Information]* Regional COCs, where all customer functions (including sales distribution and engineering) could operate more intimately together, was a response to customer needs.

[Confidential Information]

- 39 The satisfaction survey results are shown in the above charts. Full details of the methodology and results of the customer surveys are contained in *[Confidential Information]* but the key results are summarised in paragraph 40 below:
- 40 *[Confidential Information]*. Each year the survey is conducted at the same time of year in order to eradicate the potential of any seasonal bias. This meant carrying out the 2004 study just a few weeks after a price increase.
- 41 A recent survey carried out by J.D. Power and Associates (see **Appendix 5**) amongst a sample of 2,423 customers shows that the overall customer satisfaction index across 6 of the mains gas suppliers is 735 (out of 1000). The top performing natural gas company scored 743, again a score significantly lower than that achieved by Calor in its own survey. In addition, the survey shows that mains gas suppliers recorded a year-on-year decline in customer satisfaction in contrast to Calor which in its own survey has had a steady level of customer satisfaction since 2002. Calor believes that this has a strong bearing on the relative levels of customer switching experienced.

Calor's LPG Prices to Domestic Bulk Customers

42 Calor has formulated a pricing strategy based on customers' needs and intense competition in the market place. The strong competition is not only from other LPG companies but is also from other fuels, in particular heating oil, which has the benefit of running costs that historically have been half the running costs of LPG and the strong support of multi-national oil companies.

43 The largest input cost of LPG is the product itself. Prices of LPG are controlled and set on a daily or monthly basis by the upstream oil majors as well as international traders. *[Confidential Information]*

44 Calor's pricing policy is designed to:

- attract new users who would normally consider alternative fuel types, including oil;
- attract competitor LPG customers; and
- retain current Calor customers by offering price stability.

45 *[Confidential Information].*

46 *[Confidential Information].*

47 *[Confidential Information].*

48 *[Confidential Information].*

49 Calor has invested in the derivative market for both LPG and US Dollars to smooth the effect of the volatility in LPG pricing. The derivative market is risky as operating in the derivative markets can be categorised as gambling on future LPG price movements. The risk is lessened due to Calor's ability to forecast tonnage from its customers.

50 Activity in the derivatives market (i.e. purchasing swaps) is only sustainable commercially when there is a guarantee of future demand which is facilitated through established relationships with end users and the integration of the LPG and tank supplier. *[Confidential Information].*

51 Recent times have shown greater volatility in the price of LPG plus a deviation from the typical underlying winter/summer trend making future cost forecasting less reliable and the traditional storage pattern more risky (buy in summer, sell in winter). *[Confidential Information]* there has been a significant increase of the BPAP price (as set by BP) over the period January 2002 to Aug 2004.

52 Both the supply and the basic LPG raw material price are controlled by the major oil producers. Calor has therefore invested in LPG storage around the UK to enable it to buy LPG at times of low demand (and therefore usually at a lower price). A further customer benefit is the ability of LPG suppliers to take LPG from these

storage sites to meet peak winter demand and assure customer supply. These facilities are capable of storing *[Confidential Information]* tonnes of LPG.

SWITCHING

53 *[Confidential Information]* installation and uplift fees and costs [. Both of these activities] are heavily subsidised by Calor through the integrated supply system enabling the costs to be recovered by Calor over a period of year through the LPG price and it is submitted that these activities do not form an impediment to switching.

54 Customers switch supplier for a number of reasons, including price. The direct cost of switching that is borne by customers in relation to tank removal and installation is modest, and Calor does not believe that this significantly inhibits customers from switching LPG supplier.

55 *[Confidential Information]*.

56 Any LPG supplier intending to increase its market share might be prepared further to 'absorb' some of the costs of installation and uplift as Calor has done. It may also offer a low introductory LPG price for a longer period. It is also generally the case that an incoming supplier will help the customer to pay for the cost of the uplift by offering a free of charge. installation or a quantity of free LPG. This is all to the benefit to the customer and, in Calor's opinion, further demonstrates that installation and uplift fees are not impediments to switching. Such business practices are in the interest of the customer and are common in the market place.

57 Any domestic bulk customer thinking about switching LPG supplier or fuel type has easy access to information on heating fuels and their various suppliers. This information is widely available and targeted at the domestic LPG market. It is also available at little or no cost.

Oil, LPG (and, to a lesser extent, solid fuel) suppliers and installers will advertise in rural local newspapers, Yellow Pages/Thompson Local directories, specialist magazines, on the internet and also have regular direct mail campaigns to reach their target market and seek to promote the benefits of their fuel and their supply system. After receiving information on the competing fuels and checking with friends and neighbours the potential customer is able to assess their own needs and preferences and take a decision which balances benefits and cost.

The benefits of each fuel are set out in *[Confidential Information]*.

58 Calor has invested a significant amount of time and money understanding the reasons why customers would wish to switch to other suppliers or fuels. *[Confidential Information]* It is only by offering excellent service to customers in order to achieve a high level of satisfaction that a supplier, in such a competitive market, can survive.

The full details are set out in *[Confidential Information]* and are also summarised in paragraph 40 above.

59 Domestic bulk customers want a safe, secure and reasonably priced supply of LPG which is available every time they switch on their central heating system. Calor has focussed on meeting those needs because it is commercially sensible, particularly to minimise customer loss to competitors and other heating fuels. This would not be acceptable in any forward looking business and especially in the capital intensive domestic bulk LPG market. *[Confidential Information]*.

60 *[Confidential Information]*.

COSTS AND PROFITABILITY

61 As outlined in the previous sections, Calor strives to operate as efficiently and effectively as possible. This has been achieved over many years through strategies focused on increasing efficiency, reducing cost and improving customer service. The culture is one of careful volume and margin management coupled with rigorous cost control, whilst ensuring that customers' needs are addressed.

62 Calor's management also ensures that the balance between the management of risk (addressing safety issues, combating foreign exchange and LPG product cost volatility) and the fulfilment of customer needs (safe installations, security of supply and stable LPG pricing) is maintained.

63 The result of this approach is a stable, sustainable, realistic return for Calor's shareholder. In Calor's opinion, it earns a normal economic return from its activities, including the domestic bulk business. This is evidenced by the work completed in response to *[Confidential Information]*.

64 The estimated average Return On Capital Employed over the last five years for Calor's domestic bulk business, other business and for all businesses is consistent with Calor's Weighted Average Cost of Capital.

SAFETY

Calor takes complete responsibility for the supply of LPG from the refinery or terminal to the storage tanks which Calor owns and are located on domestic customers' premises. It is by operating under and investing in its current system that Calor best ensures the continued safety of the product, its delivery and its means of containment.

Investment in Safety

65 Every time that Calor makes any investment in plant equipment or systems, there is a significant integral element relating to safety. to meet the legal requirements, satisfy customer needs and ensure safe supply. Its approach to safety is laid out in its safety management system which is based on the HSE model for 'Successful Health & Safety

Management’ called HSG 65. The model has building blocks of Clear Policies and Objectives; Organisational Structure and Responsibilities; Planning, Procedures and Implementation; Performance Measurement; Reviewing Performance and the Audit function.

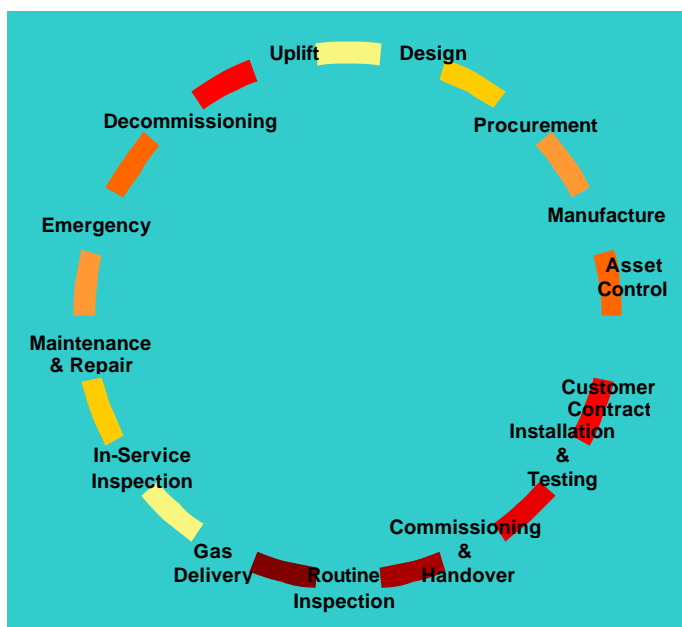
[Confidential Information].

The Integrated Approach

66 Calor’s integrated approach to safety in terms of ensuring the ‘Life Cycle Integrity’ of the LPG supply and tank/system (shown in the diagram below) produces significant benefits:

Established procedures with established responsibilities and accountabilities covering:-

- Tank and equipment design with preferred accredited suppliers for procurement.
- Independently verified manufacture and fabrication.
- Equipment and contractors operating within a quality system (compliant with Calor’s registration under ISO 9002), resulting in a consistent approach, continual improvement and the rapid identification and rectification of faults.
- Security of traceable records of the tanks and equipment.
- Installation and testing to recognised standards for assurance of the system’s integrity.
- Formal commissioning and handover to customer.
- Operation of a known and compatible system, operated by competent, trained and experienced personnel with full reporting of incidents and anomalies leading to feedback and analysis of incidents, which is vital to achieve continuous improvement and minimise potential hazardous occurrences. Almost 500 people are directly involved in this process.
- In-service inspection including a key pre-fill check with speedy resolution of any potential problem areas which is again vital to achieve continuous improvement.
- Similar standards also cover maintenance, repair and emergencies, decommissioning and uplifts.



67 These design, inspection, maintenance and repair activities are fully integrated with Calor's distribution activities including the use of forecasting and telemetry to provide the customer with continuity of supply in a completely integrated tank/system and supply package.

68 *[Confidential Information].*

Insurance

69 Calor has public liability insurance which covers damage for personal injury or property damage caused to third parties resulting from any occurrence arising from and in the course of the business of Calor and its associate companies. *[Confidential Information].* This cover has been made available to Calor at economic cost because of its integrated distribution and safety and control systems and its consequent claims record.

Incidents

70 The number of domestic customer incidents Calor receives and investigates each year is very low. On average over the past 30 years as can be seen from the diagram on the next page, there have been on average 10 or fewer incidents per year, which is less than 0.02% of Calor's total domestic bulk customer population.

71 *[Confidential Information].*

[Confidential Information].

Appendix 1
Calor Organisation Structure 2004

[Confidential Information]

APPENDIX 2

Technical Description of LPG

- 1 Commercial propane is an LPG which is stored as a liquid and has a boiling point of -42°C . At temperatures above its boiling point it exerts a pressure (known as “vapour pressure”) which is a function of the ambient temperature. Knowledge of the vapour pressure of LPG is essential in order to specify the design conditions for the pressurised system e.g. tank, tanker, pipework. Vapour pressure is a measure of LPG’s volatility. LPG containers are normally protected by safety relief valves. These are designed to protect the system against overpressure brought about by heat, fire or explosion and are set to discharge at a pre-set pressure.
- 2 When LPG liquid vaporises it requires energy in the form of latent heat from the liquid itself and from its immediate surroundings and in so doing results in a drop in temperature and pressure (often referred to as ‘autorefrigeration’). During the vaporisation of commercial propane very low temperatures of -42°C can occur, so protective clothing is essential to prevent operators receiving severe cold burns. These low temperatures must also be considered in the selection of suitable material for equipment used for the storage and transfer of LPG.
- 3 Gaseous commercial propane is approximately 1.5 to 2.0 times heavier than air, so cannot be used in locations where any escape could concentrate in low lying areas or enter drains, trenches, etc. As a result of previous incidents, the installation of LPG tanks and appliances without automatic ignition or pilot lights below ground level in cellars or basements is prohibited by the Gas Safety (Installation and Use) Regulations.
- 4 In its liquid state commercial propane occupies a much smaller volume than it does as a vapour. The ratio of vapour volume to liquid volume at atmospheric pressure and temperature is typically 274. Liquid densities are approximately half that of water; typically 0.512 for commercial propane and the liquid LPG expands considerably as its temperature increases. This high rate of expansion has to be taken into account when specifying the maximum fill quantity into any pressure vessel. All types of LPG container, irrespective of their size, shape or construction, have a design filling ratio which ensures that they are never completely “liquid full”. The free or ullage space of between 15% and 20% allows for the liquid to expand if the temperature rises.
- 5 A mixture of commercial propane and air is flammable between specific concentrations, known as the flammable range. This range is bounded by the lower and upper limits of flammability which are approximately 2.2 to 10 per cent for commercial propane. Outside these limits, LPG will not burn in air and this has to be considered in the design of LPG appliances particularly in relation to their aeration requirements, as well as in the behaviour of LPG in a ‘leak’ situation. For example, LPG escaping into the atmosphere tends to settle and is often too rich to burn (i.e. the mixture is above its upper flammability limit) resulting in it forming a gas cloud. However, if mixing with air occurs at the fringe of the gas cloud a combustible mixture is formed and will ignite if an ignition source is present. Heat generated by

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the burning gas causes turbulence and further mixing so that, eventually, most of the gas/air mixture will be within the flammable range and a serious hazard results.

- 6 As LPG is almost odourless in its natural or refined state, it is essential to add an odorant which makes the LPG easily detectable through the presence of a characteristic odour at a concentration usually one fifth of the lower flammability limit in air.
- 7 The heating content defined in terms of LPG's calorific value is considerably higher than natural gas, and complete combustion results in carbon dioxide and water vapour according to the following equation:-

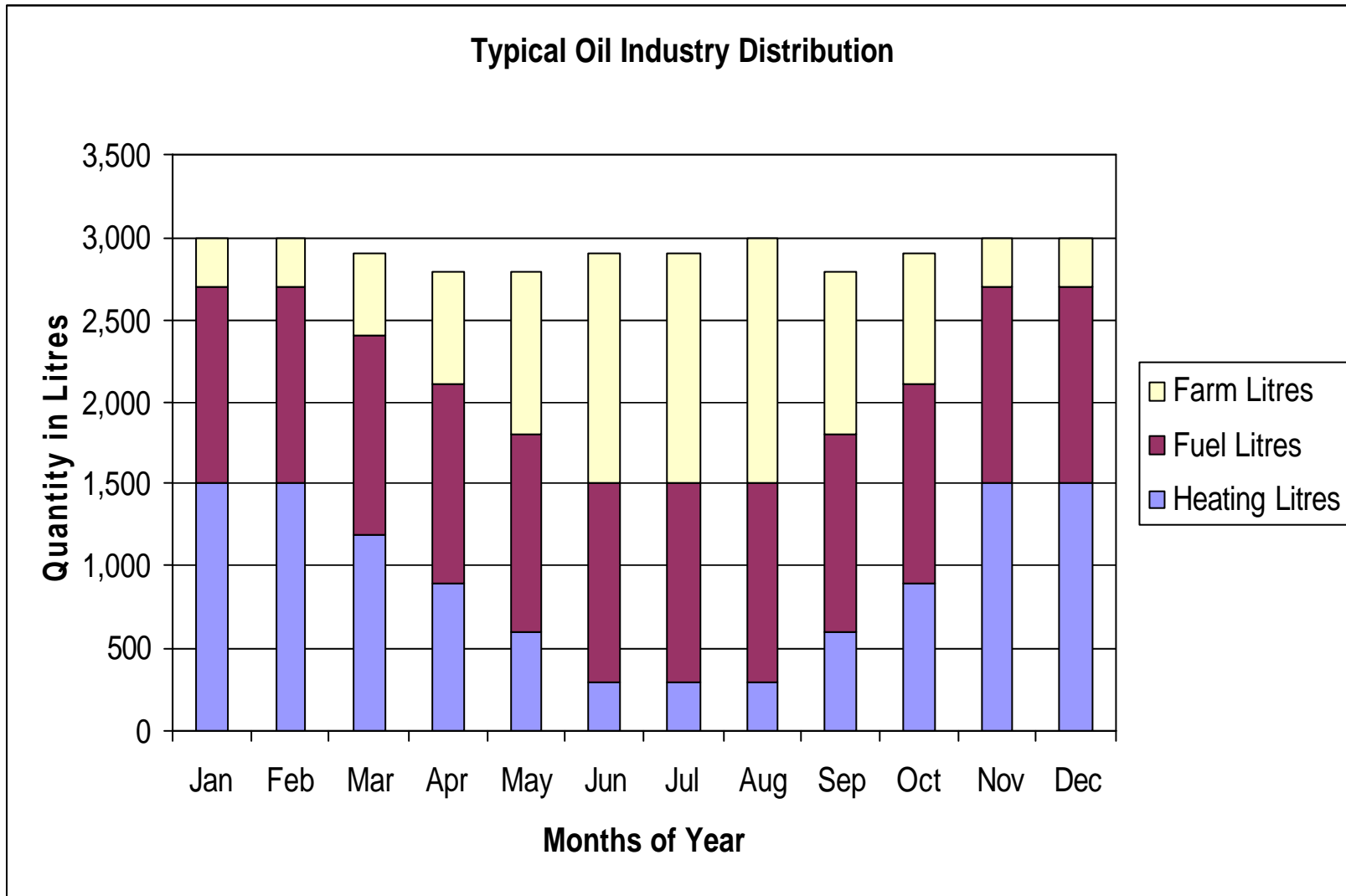


- 8 Both combustion reactions are associated with an increase in volume of LPG, plus further expansion due to the generation of heat. Each volume of propane vapour requires 24 times its own volume of air for complete combustion and, at the same time, yields three times its own volume of carbon dioxide. Where there is insufficient air, incomplete combustion products, particularly carbon monoxide, (which is poisonous) will also be produced. Ventilation requirements are therefore critical, as, if the level of oxygen becomes depleted, there is the potential for significant quantities of carbon monoxide to be formed.
- 9 In addition to the hazards that can result inside the domestic customer's property in relation to the correct functioning of the appliances and adequate ventilation, as would be the case with all fuels, LPG poses external hazards to the property because of the considerable amount of stored energy and its pressure.
- 10 In terms of energy, one tonne of propane, an amount typical of that stored in a domestic bulk tank contains 1957 litres of liquid propane which provides enough energy to run a typical boiler for up to half a year. [*Confidential Information*].
- 11 Propane has to undergo a two-stage pressure reduction before being supplied to the customer's appliances at 37mbar. In contrast to natural gas supplied to a domestic customer, this reduction from approximately 7bar takes place in the customer's garden from the reservoir of energy in the bulk LPG tank.
- 12 With natural gas this pressure reduction is undertaken at reduction stations throughout the national grid with only low pressure pipework running under the domestic customer's garden, so in the case of natural gas there is no vast storage of potentially destructive energy on the customer's site and the pressure is 100 times less.
- 13 Commercial propane is a highly flammable and potentially explosive product which must be contained and handled in a safe manner. LPG must meet the requirements of BS:4250 to ensure that it is non-corrosive and non-toxic. Tanks must be properly designed, inspected and maintained and fitted with the correct functioning pressure regulation and safety devices. Tanks must also be located away from potential combustible material and any potential sources of ignition.

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- 14 Leaks from the tank, fittings or installation pipework, if not immediately addressed, can give rise to:-
- Jet fires
 - Gas clouds which with delayed ignition become cloud fires.
- 15 These hazards can cause serious damage to nearby property and endanger life. A more serious hazard occurs if the fire impinges on the tank. This causes the LPG to boil rapidly and leads to overpressure within the tank. If the safety relief valve is correctly set and functioning this will relieve the pressure for a period of time. However, if the overpressure is not controlled then the tank will explode and give rise to a massive fireball. A particular type of explosion known as a Boiling Liquid Expanding Vapour Explosion (“BLEVE”) occurs if the fire impingement is on the vapour or unwetted portion of the tank. A BLEVE is usually associated with considerable explosive overpressure, and a high level of fragmentation (flying missiles of tank metal) as well as a massive fireball.
- 16 *[Confidential Information].*
- 17 *[Confidential Information].*
- 18 *[Confidential Information].*

Appendix 3



This chart shows the delivery patterns for a typical oil distributor. Heating oil has a similar consumption pattern to LPG. However, the oil distributor also delivers significant road fuel which has a steady year round consumption. The top bar is the fuel used by farmers. This is a key difference between the oil industry and LPG. The farmers' consumption peak is exactly the opposite of heating use and therefore allows the oil industry to have significantly lower distribution costs.

Oil tankers have separate storage compartments to allow them to carry different fuels.

Appendix 4

[Confidential Information]

Appendix 5

NEWS/INFORMATION

J.D. POWER
AND ASSOCIATES

A GLOBAL MARKETING INFORMATION FIRM
Los Angeles • New York • Detroit • Phoenix • Toronto • Tokyo • Singapore • London • Sydney

J.D. Power and Associates Reports:

Increases in Customer Spending on Electricity and Gas in the UK Contribute to Declines in Customer Satisfaction with Utility Providers

Powergen Ranks Highest in Customer Satisfaction among Electricity Suppliers;
Scottish and Southern Energy and ScottishPower Tie to Rank Highest among Gas Suppliers

(a) FOR IMMEDIATE RELEASE: November 2, 2004

LONDON—Increases in monthly spending for both gas and electricity contribute to falling customer satisfaction with utility providers, according to the J.D. Power and Associates 2004 UK Electricity and Gas Supplier Customer Satisfaction StudySM released today.

Although the amount spent per month on electricity has been showing small declines over recent years as customers switch to cheaper suppliers, the average monthly spending on electricity has increased to its highest level of £31.58—a 7 percent increase compared to 2003. The price paid for gas also has increased for the first time since 2001 to £29.78—a year-over-year increase of 9 percent. These increases have contributed to a drop in overall customer satisfaction of 33 index points for electricity and 32 points for gas suppliers.

“Some electricity and gas suppliers announced further price increases in September, which could compound the declines we’re already seeing in customer satisfaction,” said Gunda Lapski, director of UK utilities studies at J.D. Power and Associates. “Highly satisfied customers are less likely to switch and are more likely to recommend their supplier to others. They are also more likely to purchase other services from their suppliers. With the current declines in customer satisfaction, it will be interesting to see what pricing and incentive packages will be offered in the short term to encourage switching.”

The study finds that customers who switched suppliers in the past 12 months pay less, on average, than those who have never switched, particularly among electricity customers. More than 80 percent of customers who have switched electricity and gas suppliers found the switch to be easy. However, among those who have never switched, only about 60 percent thought the process would be easy.

The study also finds that among the more than 50 percent of electricity and gas customers who have Internet access, 15 percent of electricity subscribers and 17 percent of gas customers have accessed their supplier's website in the past 12 months. This is a significant increase over 2003 when access rates were 11 percent and 12 percent, respectively. Of those who had accessed their supplier's website, more than 15 percent had reviewed their bill during the year, and nearly 30 percent had, at some point in the past, submitted a meter reading.

Electricity Supplier Performance

Powergen ranks highest in customer satisfaction with electricity suppliers with an index score of 714 on a 1,000-point scale. Powergen receives the highest ratings in the two most important factors: power quality and reliability and price and value. The study also measures image, billing and payment, meter reading, and customer service. Following Powergen in the ranking are British Gas and Scottish and Southern Energy, respectively.

Gas Supplier Performance

Two Scottish-based companies—Scottish and Southern Energy and ScottishPower—tie to rank highest among gas suppliers with 743 index points each. Scottish and Southern Energy receive the highest ratings in billing and payment and customer service, while ScottishPower receives the highest ratings in the area of price and value. Powergen and British Gas follow in the rankings, respectively.

The 2004 UK Electricity and Gas Customer Satisfaction Study is based on 2,646 interviews with domestic electricity customers and 2,423 interviews with domestic gas customers throughout the UK.

The European headquarters of J.D. Power and Associates is located in Guildford, UK. With world headquarters in Westlake Village, California, USA, J.D. Power and Associates is a global marketing information services firm operating in key business sectors including market research, forecasting, consulting, training and customer satisfaction.

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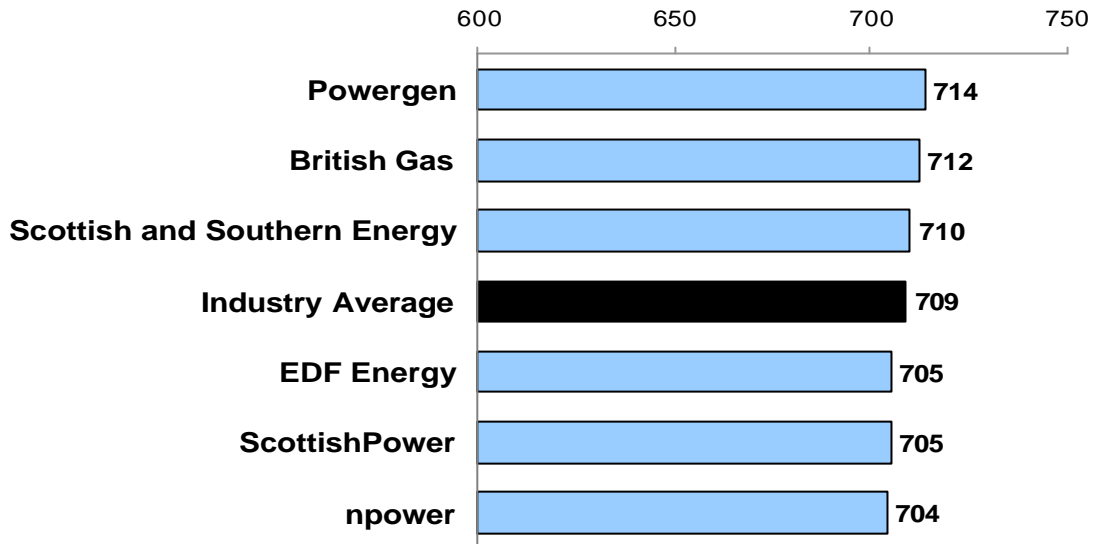
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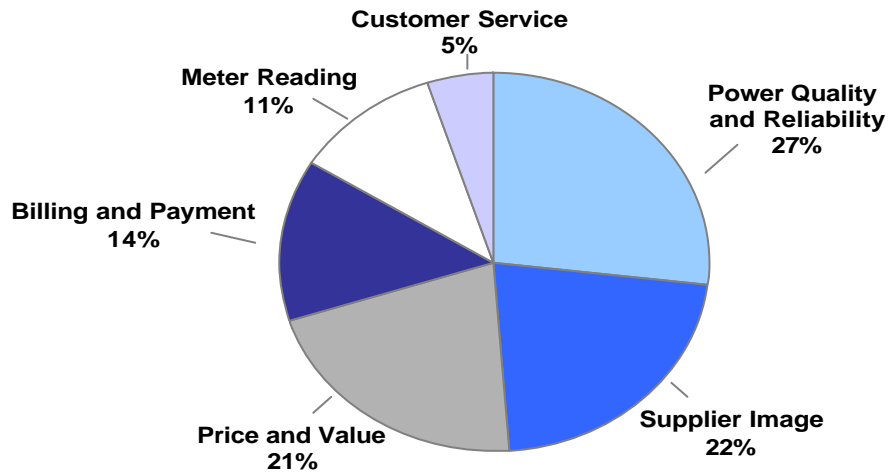
NOTE: Four charts follow.

J.D. Power and Associates 2004 UK Electricity and Gas Supplier Customer Satisfaction StudySM

Customer Satisfaction Index Scores Electricity Suppliers



Customer Satisfaction Component Weights

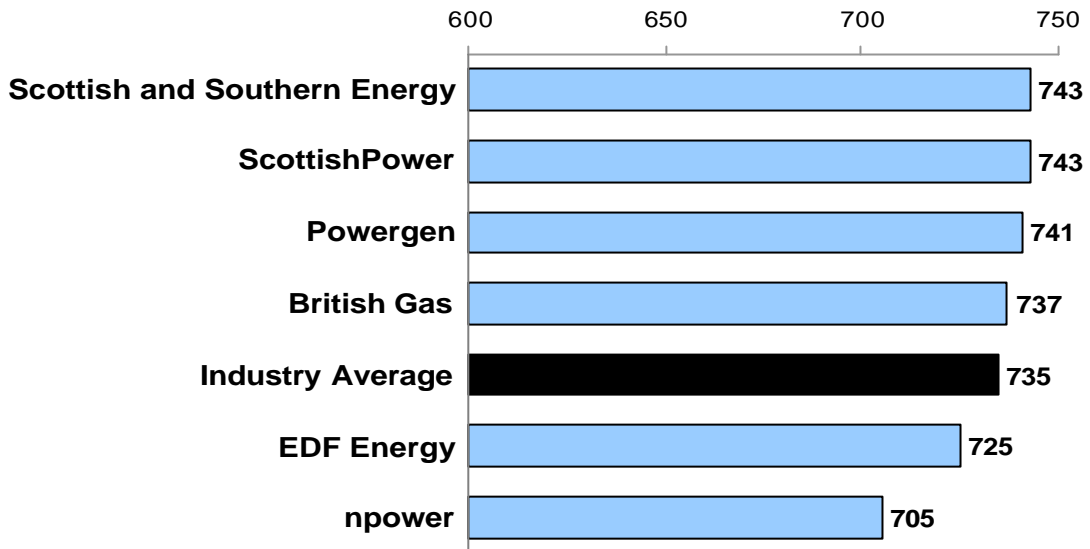


Source: J.D. Power and Associates 2004 UK Electricity and Gas Supplier Customer Satisfaction StudySM

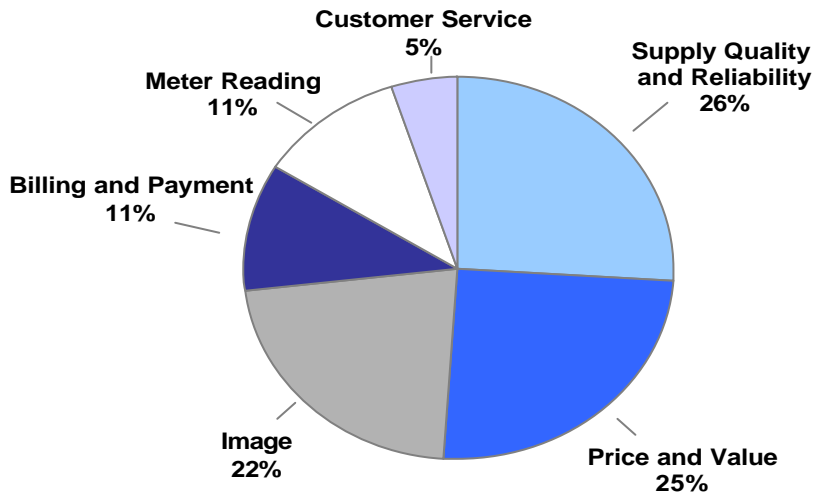
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J.D. Power and Associates 2004 UK Electricity and Gas Supplier Customer Satisfaction StudySM

Customer Satisfaction Index Scores Gas Suppliers



Customer Satisfaction Component Weights



Source: J.D. Power and Associates 2004 UK Electricity and Gas Supplier Customer Satisfaction StudySM

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