An assessment of the adequacy of competition in the South African piped-gas industry

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1. INTRODUCTION

1. The National Energy Regulator of South Africa ("NERSA") regulates the piped-gas industry in terms of the National Energy Regulator Act No. 40 of 2004, the Gas Act No. 48 of 2001 and the Petroleum Pipelines Act No. 3 of 2003. In terms of section 21(1)(p) of the Gas Act, one of NERSA’s key functions in the gas industry is to regulate gas prices. This section further provides that NERSA must approve maximum prices for gas distributors, reticulators and all classes of customers. This approval is subject to NERSA establishing that there is inadequate competition in the market as contemplated in Chapters 2 and 3 of the Competition Act No. 89 of 1998.

2. NERSA has previously undertaken such as assessment.¹ When it published its Maximum Gas Prices Methodology in October 2011, NERSA provided its view that there was inadequate competition in the piped-gas sector which therefore required the approval of maximum gas prices as prescribed. NERSA indicated that it would periodically review its findings as market conditions might change resulting in increased competition which would negate the need for the approval of maximum gas prices. Pursuant to its commitment to periodic review of the adequacy of competition, NERSA has commissioned Genesis Analytics to assist in undertaking the assessment of whether there is currently adequate competition in relevant gas markets as required by the Gas Act. This project includes two components:

   2.1. Firstly, NERSA required the development of an economic framework model that can be used by the regulator to assess the adequacy of competition in the South African piped-gas industry on a periodic basis; and

   2.2. Secondly, on the basis of this model, an assessment of whether there is currently adequate competition in the relevant South African gas markets should be undertaken.

3. This document is the second of these components. This assessment is based on the economic framework developed in the first component of this project and is structured as follows:

   3.1. The first section on the industry background provides context for the rest of the assessment by discussing the market structure, regulation of gas prices and tariffs and development in the industry since the previous determination;

   3.2. The second section deals with the relevant product and geographic markets that can be defined within the piped-gas industry;

   3.3. The third section assesses whether there is adequate competition in the appropriate relevant markets defined in the second section; and

   3.4. Finally, we summarise the conclusions of the assessment.

¹ NERSA (2012) Determination of inadequate competition in the piped-gas market as contemplated in Chapters 2 and 3 of the Competition Act, 1998 (No. 89 of 1998 as amended), as envisaged in Section 21(1)(p) of the Gas Act, 2001 (No. 48 of 2001)
2. INDUSTRY BACKGROUND

4. The nature and characteristics of the piped-gas industry are very important aspects to be considered in the assessment of competition. In this section, we discuss the market structure of the piped-gas industry including the licensees’ active at the different levels of the supply chain, the manner in which gas prices and tariffs are regulated and the developments in the industry since the previous determination.

2.1. MARKET STRUCTURE

5. The market structure of the piped-gas industry in South Africa is comprised of an upstream market which includes production and exploration activities, a midstream market made up of transmission and distribution and a downstream market which consists of reticulation and trading activities. An illustration of the market structure and the respective licensees is illustrated in Figure 1 below.

Figure 1: Piped-gas market structure in South Africa

![Market Structure Diagram]

Note: There are newly licenced operators in the market. These include Molopo which was granted operation and trading licences in the Virginia area of the Matjhabeng Local Municipality of the Free State Province; Spring Lights Gas – CNG which was granted a licence for construction and the operation of the storage facility in KwaZulu-Natal as well as a trading licence; and Columbus Stainless Steel granted a licence for the operation of the pipeline and trading licences in Mpumalanga. These licensees have not been included in the figure above as they have been licenced quite recently and have not commenced operations.

2.1.1. Upstream

6. The upstream segment of the piped-gas supply chain consists of the production and exploration activities for gas in South Africa. These activities are overseen and licensed by the Petroleum Agency South Africa ("PASA").
7. There are currently four sources of gas in South Africa. This includes natural gas which is imported by Sasol Gas (a subsidiary of Sasol Ltd) from Mozambique, synthetic gas (so-called ‘methane-rich’ gas) manufactured by Sasol at its Secunda plant, natural gas which is extracted by the Petroleum, Oil and Gas Corporation of South Africa SOC Ltd (“PetroSA”) from the Bredasdorp basin for its own use and biogas that is mainly generated through anaerobic digestion at various sites in the country. However the gas produced is insignificant and will not be discussed further.

7.1. Sasol Gas imports natural gas from the Pande and Temane gas fields in Mozambique to Secunda via the transmission pipeline owned by the Republic of Mozambique Pipeline Investing Company (ROMPCO). This is a joint venture company comprised of the South African Gas Development Company (Pty) Ltd (“iGas”), and Companhia Mocambicana de Gasoduto S.A.R.L (“CMG”), nominated by their respective governments as the designated shareholders, with a 25% shareholding each. The third shareholder, Sasol Gas Holdings (Pty) Ltd has a 50% shareholding. The transmission pipeline is 865 kilometers long with a 26 inch diameter, and capacity of 147 million Gigajoules per annum.

7.2. Sasol Synfuels, which is a coal-based synthetic fuels manufacturing facility, produces methane-rich gas in its plant in Secunda. Synthetic gas is produced through coal gasification and natural gas reforming through the utilisation of Sasol’s proprietary technologies.

7.3. PetroSA, a state-owned entity, owned by the Central Energy Fund, is the only producer of indigenous natural gas. Its offshore producing gas field is located in the Bredasdorp basin and provides feedstock for PetroSA’s Gas-to-Liquids (“GTL”) plant and it produces for its own exclusive use. However, this field is close to being depleted, and further developments of the field have been undertaken in order to supply feedstock for the GTL plant. In 2011, PetroSA was granted approval to explore additional gas reserves of the coast of Mossel Bay, in which drilling activities have been ongoing.

8. Given these sources, it is evident that Sasol Gas is the only supplier of piped-gas in South Africa. PetroSA is not a supplier of piped-gas as it uses all of its production for its GTL plant.

2.1.2. Midstream

9. The midstream segment of the supply chain is comprised of the transmission and distribution activities of piped-gas in South Africa. The figure below illustrates the extent of the gas pipeline network in the country. Transmission and distribution pipelines are only present in four of the country’s provinces – Mpumalanga, Free State, Gauteng and KwaZulu-Natal.
2.1.2.1. Transmission

10. Transmission is defined in terms of the Gas Act as "the bulk transportation of gas by pipeline supplied between a source of supply and a distributor, reticulator, storage company or eligible customer, or any other activity incidental thereto, and “transmit” and “transmitting” have corresponding meanings".\(^7\)

11. There are two transmission pipeline operators in South Africa – Sasol Gas which owns and operates the gas transmission facilities in the Gauteng, Mpumalanga and Free State provinces and Transnet Pipelines which owns and operates a gas transmission pipeline, known as the ‘Lily’ pipeline, from Secunda in Mpumalanga to Durban South in KwaZulu-Natal.

11.1. The transmission pipelines owned by Sasol Gas in the Gauteng/Mpumalanga/Free State provinces operate at a pressure above 15 bar gauge and have a combined length of approximately 903 kilometers, and diameters ranging from 4 to 30 inches.\(^8\) Natural gas transmitted by pipeline over long distances makes use of compressor stations at certain intervals.\(^9\) A compressor station exists in Komatipoort, Mpumalanga, which facilitates the natural gas delivery from Mozambique into South Africa. These compressor stations are fuelled by the natural gas from the pipelines. An illustration of Sasol’s transmission pipeline network in the Gauteng/Mpumalanga/Free State region is provided in the figure below.

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\(^7\) The Gas Act (No. 48 of 2001), s1
\(^8\) NERSA (2012) Gas-fired electricity generation, Research Report, p.6, para.2.3
\(^9\) Department of Minerals and Energy, Republic of South Africa (2012) Gas Infra-Structure Plan, p.6, para 2.1
11.2. Transnet Pipelines, a division of Transnet Limited, owns and operates a gas transmission pipeline, known as the ‘Lily’ pipeline, which is approximately 600 kilometers long, and transports a portion of the methane rich gas from Sasol’s Secunda plant to KwaZulu-Natal. The Transnet pipeline extends to Newcastle, Richards Bay and Durban South. The Lily pipeline from Secunda to Durban is comprised of two pipeline sections, with diameters of 18 and 16 inches.\(^\text{10}\) The figure below provides an illustration of the geographic coverage of the Lily pipeline in KwaZulu-Natal.

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\(^\text{10}\) NERSA (2012) Gas-fired electricity generation, Research Report, p.6, para2.3
Distribution

12. Distribution is defined in terms of the Gas Act as “the distribution of bulk gas supplies and the transportation thereof by pipelines with a general operating pressure of more than 2 bar gauge and less than 15 bar gauge or by pipeline with such other operating pressure as the Gas Operator may permit according to criteria prescribed by regulation to points of ultimate consumption or to reticulation systems, and any other activity incidental thereto, and “distribute” and “distributing” have corresponding meanings.”

13. Distributors are granted an exclusive geographic area for distribution operations, based on their ability to supply present and future potential consumers at competitive prices and conditions. The distribution operation licence is limited to a particular gas specification, as included in the licence conditions. The distributor will be granted the construction, operation and trading licences for its exclusive geographic area in which the construction and operations licences are exclusive for the period of validity of such licences (25 years), and the trading licence is exclusive for a period determined by the regulator.

14. Sasol Gas owns the distribution networks for piped-gas in South Africa and has exclusivity over distribution in the specific areas covered by its distribution network in

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11 The Gas Act (No. 48 of 2001), s 1
12 Gas Act (No.48 of 2001), s21(1) (n)
13 Gas Act (No.48 of 2001), s21(1) (m)
Gauteng, Mpumalanga, Free State and KwaZulu-Natal. The distribution facilities are comprised of pipelines operated at pressures between 2 and 15 bar gauge, pressure reduction stations and customer meter stations. These distribution pipelines have a combined length of 317 kilometers, and diameters ranging from 3 to 12 inches. Sasol Gas distributes and trades both the natural gas from Mozambique as well as domestically manufactured methane-rich gas to customers. The figures below provide an illustration of the geographic coverage of Sasol Gas’ distribution network in Gauteng, Mpumalanga, Free State and KwaZulu-Natal.

Figure 5: Gas distribution pipelines in the Gauteng/Mpumalanga/Free State region

Source: NERSA

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14 NERSA (2011) Discussion Document, Determination of the inadequate competition in the piped-gas industry as contemplated in chapters 2 and 3 of the Competition Act, 1998 (Act No.89 of 1991), p.9, para 3.7(e,f)
15 NERSA (2012) Gas-fired electricity generation, Research Report, p.6, para 2.4
2.1.3. **Downstream**

15. The downstream segment of the supply chain includes activities such as the trading and reticulation of piped-gas in South Africa. These activities involve the selling of gas to traders as well as to end customers. We note that the trading of gas can take place at any level of the supply chain after production.

**Gas Trading**

16. Trading is defined in terms of the Gas Act as “the purchase and sale of gas as a commodity by any person and any services associated therewith, excluding the construction and operation of transmission, storage and distribution systems, and “trading services” has a corresponding meaning.”

17. South Africa currently has the following gas traders; Sasol Gas (Pty) Ltd, Spring Lights Gas (Pty) Ltd, Virtual Gas Network (Pty) Ltd, NGV Gas (Pty) Ltd, Novo Energy (Pty) Ltd, Reatile Gastrade (Pty) Ltd and Columbus Stainless (Pty) Ltd. Newly licenced traders include Molopo Energy Limited and Spring Lights – CNG, however, these licensees have only obtained their licenses recently and have not yet begun operating.

17.1. **Sasol Gas** is the largest trader of piped-gas in South Africa. In the 2014 calendar year, it delivered sales volumes of approximately 170 million gigajoules (“GJ”) of gas to internal and external customers. It trades natural gas in the Gauteng and Free State areas and methane-rich gas in Mpumalanga and KwaZulu-Natal. Furthermore, Sasol Gas is the only vertically integrated licensee as it owns and

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16 Gas Act (No. 48 of 2001), s1
18 Genesis calculations based on information received by NERSA
19 Genesis calculations based on information received by NERSA
operates pipeline networks at both the transmission and distribution levels and trades in gas.21

17.2. **Spring Lights Gas** began its trading activities in 2002 and supplies gas to industrial and commercial customers situated in the south of Durban in KwaZulu-Natal via Sasol Gas’ distribution network.22 It purchases methane-rich gas from Sasol Gas, which originates from the Sasol Synfuels plant in Secunda, and is transported to KwaZulu-Natal via Transnet’s Lily pipeline. During the 2014 calendar year, Spring Lights Gas supplied approximately □ customers and its sales volumes were approximately □ GJs.23

17.3. **Novo Energy** was granted a licence to operate gas storage and distribution facilities in 2009, and commercial operations commenced in November 2012.24 In addition, Novo Energy has a gas trading licence issued by the Energy Regulator to trade gas in certain areas in South Africa. It is involved in the sourcing, processing, compressing and supplying of natural gas to various private and public dispensing sites. Novo Energy operates in a similar manner as a petrol filling station; however, instead of dispensing petrol, it dispenses natural gas.25 Novo Energy supplied industrial customers and vehicular customers which involved the retail sales to vehicles from services stations, during the 2014 calendar year. Its total sales volume during this period was approximately □. NOVO Energy procures its gas mainly from Sasol Gas and some insignificant portion from its project at a landfill site in the Ekurhuleni Municipality from which it harvests methane and, after compressing this gas, dispenses it to various vehicle customers.26

17.4. **Virtual Gas Network** (VGN), a wholly owned subsidiary of CNG Holdings was granted a licence in 2010 to operate a storage facility in the Langlaagte area in the City of Johannesburg Metropolitan Municipality, and a trading licence to trade gas in 20 geographic areas of Gauteng, Free State, KwaZulu-Natal and Mpumalanga.27 Commercial operations by VGN commenced during 2013.28 It sources its gas from Reatile Gastrade. VGN compresses the gas and stores it in stacked cylinder configuration containers called MAT modules. These mobile storage containers are then transported (using heavy duty trailers) to daughter stations at customer sites where they are exchanged for empty MAT modules which are returned to the mother stations for refueling. VGN’s customers are comprised of industrial customers and filling stations, for which the total sales volumes are approximately □ GJs.

17.5. NGV Gas, also a subsidiary of CNG Holdings, acquired a licence to trade gas in 2010. NGV sets up gas filling stations for private and public transport as well as in-...
house filling stations for large companies. Similar to VGN, it procures its gas from Reatile Gastrade.

17.5.1. Since VGN and NGV are subsidiaries of the same holding company and their business operations are related to some extent, we consider them to be the same licensee, and are hereafter referred to as VGN/NGV.

17.6. Reatile Gastrade acquired its license from NERSA to trade gas in the Gauteng area in 2014. The company intends on purchasing gas from Egoli Gas, who in turn sources its gas supply from Sasol Gas. Reatile Gastrade is a wholly owned subsidiary of Reatile Energy, which in turn is wholly owned by the Reatile Group that also owns Egoli Gas. However, Reatile is a new entrant and has not started significant trading since it is still in the process of securing customers and infrastructure for the supply of gas. It has started supplying gas to VGN/NGV. Hence, information on the extent of its activities or volume of sales is not available at present.

17.7. A number of trading licences were granted recently, which have not commenced commercial operations yet, they are included here for completeness:

17.7.1. Columbus Stainless Steel was licensed in 2014 for the operation of a gas distribution pipeline and trading of gas. It indicated that it does not intend to start a new gas business as it will only supply gas to one customer – Middleburg Ferrochrome – which was previously part of the same company. Therefore, it cannot be considered as a significant new competitor in the industry.

17.7.2. Molopo SA was granted licences for operating a gas storage facility and the trading of gas in the Virginia area of Matjhabeng Local Municipality in the Free State in March 2015. It has not yet commenced commercial activities; and

17.7.3. SL-CNG is a wholly owned subsidiary of Spring Lights Gas and is licenced to construct a distribution pipeline in Prospecton in the south of Durban, operate a storage facility and trade gas. It has not yet commenced commercial activities.

These trading licences are exclusive for a period determined by NERSA.

Reticulation

18. Gas reticulation is an element of the gas supply chain that is not regulated by NERSA in terms of the Gas Act, but is part of the executive authority of local government. Both gas reticulation and distribution facilitates the supply of gas to end use consumers, however,
the general operating pressure of pipelines used for gas reticulation is less than 2 bar gauge, while that of distribution is between 2 and 15 bar gauge.\textsuperscript{34}

19. \textbf{Egoli Gas} is the primary reticulator in South Africa and has a network of approximately 1200 kilometers of pipelines. It purchases about \underline{\underline{\textbf{34}}} GJs of natural gas per annum from Sasol Gas and reticulates gas to small industrial and domestic customers in the Johannesburg area.

20. There is also a small gas reticulation network in Port Elizabeth, operated by \textbf{Easigas} which supplies approximately \underline{\underline{\textbf{35}}} GJs of liquid petroleum gas/air mixture per annum.\textsuperscript{35}

21. Gas reticulation falls under the jurisdiction of local municipalities and is regulated under the municipal By-Laws.\textsuperscript{36} NERSA is responsible for monitoring gas prices charged to reticulators by traders, which in Egoli Gas’ case is Sasol Gas Ltd.

2.2. REGULATION OF GAS PRICES AND TARIFFS

22. The Gas Act makes a clear distinction between gas prices and tariffs. Specifically, the gas price refers to the charge for a gas molecule to a distributor, reticulator or final consumer; whereas a tariff refers to the charge for the network or gas service to any customer.\textsuperscript{37} Therefore, gas charges in South Africa are made up of both prices and tariffs. The figure below illustrates the build-up of the total charges for piped-gas. It is made up of the maximum price for the gas energy (that is, the gas molecule), transmission and distribution tariffs and a trading margin. The approach used to determine each of these elements is described in more detail below.

Figure 7: Build-up of total charges for piped-gas

2.2.1. Maximum price for gas energy

\textsuperscript{34} Competition Tribunal, Competition Commission and Egoli Gas (Pty.) Ltd., Case no. 016402, 28 March 2013, p.5 para 2.3
\textsuperscript{36} Competition Tribunal, Republic of South Africa, Case No: 016402, Competition Commission vs Egoli Gas, p.5 para 2.4
\textsuperscript{37} Gas Act (No.48 of 2001), s1
23. As stipulated in Section 21(1) (p) of the Gas Act, the Gas Regulator may impose licence conditions within the following framework of requirements and limitations: “maximum prices for distributors, reticulators and all classes of consumers must be approved by the Gas regulator where there is inadequate competition as contemplated in Chapter 2 and 3 of the Competition Act, 1998 (Act No.89 of 1998).” NERSA has thus developed a methodology for approving maximum prices for gas in the piped-gas industry in line with the above requirement.\textsuperscript{38}

24. In approving maximum prices of piped-gas, NERSA will not set prices but instead, will review maximum piped-gas prices prepared by licensees or applicants, request licensees or applicants to amend maximum prices, and may or may not approve maximum gas prices.\textsuperscript{39}

25. The methodology used for approving maximum prices of gas consists of two alternative approaches, namely, the use of energy indicators and the ‘pass-through’ of costs approach.

Energy price indicators to determine the maximum price for gas energy (GE)

26. This is the maximum price for gas at the point of first entry into the transmission or distribution network and is used in the absence of a transparent gas market price in South Africa. This price is based on specific energy price indicators such as coal (CL), diesel (DE), electricity (EL), heavy fuel oil (HFO) and liquefied petroleum gas (LPG).\textsuperscript{40}

27. The energy regulator approves the maximum price of piped-gas proposed by an applicant or licensee based on the following formula:

\[
GE = w_1CL + w_2DE + w_3EL + w_4HFO + w_5LPG
\]

in which \(w_n\) refers to the weighting of the \(n^{th}\) indicator in the basket.\textsuperscript{41}

28. These weights have been determined by the regulator through the utilisation of total South African secondary energy sources, excluding the volume of coal used by Eskom for electricity generation, and from independent sources such as statistics published by the Department of Energy.\textsuperscript{42, 43}

29. The frequency of the maximum price review will take place over a 12 month period, using the 12 month average price of the energy indicators for the preceding period. However, licensees seeking a different review period can do so based upon their commercial agreements, in which case the preceding equivalent period average price of energy indicators will be used.\textsuperscript{44} Appendix 1 provides further details on the manner in which the maximum gas energy price has been calculated for this assessment.\textsuperscript{45}

The Pass-through approach

\textsuperscript{38} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa.
\textsuperscript{39} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.8, para 2.3.1
\textsuperscript{40} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.10, para 3.1
\textsuperscript{41} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.10, para 3.1
\textsuperscript{42} This was a once off assessment by NERSA.
\textsuperscript{43} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.11, para 3.2
\textsuperscript{44} NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.12, para 3.4
\textsuperscript{45} Genesis calculations based on information received from NERSA.
30. This approach is applied in instances where licensees deem that the preferred and appropriate price for gas energy is either higher or lower than the price determined by the energy indicator approach. This approach enables the efficiently and prudently incurred costs by a licensee for the procurement of gas to be fully recovered, and enables it to make a profit commensurate with its risk.\(^{46}\)

31. A requirement of the pass-through approach is a cost-based price build-up. These costs are inclusive of the cost of the procured or produced gas, any transport or regasification costs, transmission tariffs, distribution tariffs and trading margins. Both NOVO Energy and VGN/NGV use the pass-through approach for their maximum gas energy price.

**Maximum gas prices**

The maximum gas energy prices approved by NERSA for each of the respective licensees, using either the energy indicator or pass through approaches, are shown in the table below.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sasol Gas (natural gas and synthetic gas)</td>
<td>R 117.69</td>
<td></td>
</tr>
<tr>
<td>Spring Lights Gas (synthetic gas)</td>
<td>R 136.58</td>
<td></td>
</tr>
<tr>
<td>VGN/NGV (CNG)</td>
<td></td>
<td>R 110.00</td>
</tr>
<tr>
<td>Novo Energy (CNG)</td>
<td></td>
<td>R 117.44</td>
</tr>
<tr>
<td>Reatile Gastrade (CNG)</td>
<td></td>
<td>R 135.82</td>
</tr>
</tbody>
</table>


2.2.2. **Tariffs for network or gas services**

**Transmission and storage tariffs**

32. According to section 4(h) of the Gas Act, the gas regulator must, “monitor and approve, and if necessary regulate, transmission and storage tariffs and take appropriate action when necessary to ensure that they are applied in a non-discriminatory manner.”

33. The tariff application process requires the licensee to submit an application for tariff approval to NERSA, based on their respective preferred methodology from the approved menu of tariff methodologies, for the gas transmission or storage facilities.

34. NERSA reviews each tariff application using the same methodology chosen by the tariff applicant taking into consideration any other relevant information for assessing the reasonableness of each application. The licensee may also use its own variation of the tariff methodologies, provided that it is proven, tested and verifiable.\(^{47}\)

\(^{46}\) NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, p.13, para 3.5

\(^{47}\) Guidelines for monitoring and approving piped-gas transmission and storage tariffs in South Africa (2009) p.6 para 3.1
35. The methodologies from which the transmission and storage applicants or licensees can use to submit tariff applications include the following:

Box 1: Methodologies used to submit tariff applications

<table>
<thead>
<tr>
<th>Methodologies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rate of return regulation</td>
<td>The overall tariff levels are adjusted according to the company’s efficient level of accounting costs and costs of capital. It is based on the revenue calculation of the company which it will be permitted to earn in order to cover its efficient operational expenses and provide a return on its efficient level of investment in capital assets.</td>
</tr>
<tr>
<td>2. Incentive regulation</td>
<td>Incentive based regulation involves the provision of incentives for increased efficiency and the setting of prices or revenues for a number of years into the future by including an “efficiency factor”.</td>
</tr>
<tr>
<td>2.1 Price Caps</td>
<td>Associated with CPI-X regulatory regimes in which CPI is the appropriate inflation index and X refers to an efficiency target.</td>
</tr>
<tr>
<td>2.2 Revenue Caps</td>
<td>A protection provision for the licensee against the variation of demand that applies in the price cap, through an estimation of the allowed revenue required by the related business.</td>
</tr>
<tr>
<td>3. Profit sharing and sliding scales</td>
<td>An excess of profits or losses in relation to the allowable weighted average cost of capital (WACC) results in them being shares between customers and licensees in predetermined portions.</td>
</tr>
<tr>
<td>4. Hybrids of 1, 2 and 3</td>
<td>A combination of the price cap or rate of return approaches with a revenue sharing approach, or another mechanism utilising realised earnings to determine prices.</td>
</tr>
<tr>
<td>5. Discounted cash-flow</td>
<td>The appropriate tariffs for transmission and storage facilities are determined using project finance-based financial modelling</td>
</tr>
</tbody>
</table>

Distribution tariffs

36. NERSA is not mandated to regulate distribution tariffs. Licensees can set the tariff without having to comply with a particular tariff methodology or approach. However, Sasol Gas, as the only licensee operating a distribution network, does submit the distribution tariffs to NERSA in its periodic applications for price and tariff approvals.

Appropriate tariffs for each licensee

37. The table below provides the tariffs for transmission and storage approved by NERSA as well as the distribution tariffs. Only Sasol Gas charges both transmission and distribution tariffs (including for the use of the Lily pipeline) which are charged to end customers and traders. The latter pass these tariffs on to their end customers. Novo Energy and VGN/NGV, the compressed natural gas suppliers, can charge a storage tariff in relation to their MAT modules (licensed as mobile storage facilities) which are used to supply gas to customers. However, we understand that they have not applied for such tariffs.

Table 2. Tariffs for transmission, distribution and storage charged by Sasol Gas for the period 26 March 2014 to 30 June 2014, and 1 July 2014 to 30 June 2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission tariffs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Zone 1</td>
<td>R 5.09</td>
<td>R 5.13</td>
</tr>
</tbody>
</table>

Guidelines for monitoring and approving piped-gas transmission and storage tariffs in South Africa (2009) p.7 para 3.2
2.2.3. Trading margin

38. NERSA is guided by Regulations 4(4) of the piped-gas regulations when monitoring and approving piped-gas trading margins. These regulations provide that gas prices, interpreted here as referring to the maximum prices for gas energy and the trading margin, must enable the licensee to “recover all efficient and prudently incurred investment and operational costs, and make a profit commensurate with its risk.”

39. The maximum pricing methodology states that the trading margin should be calculated as follows:

“The trader’s margin (as a percentage) will be calculated in nominal terms. The nominal Weighted Average Cost of Capital (WACC) of the trader will be the trading margin (%), since all other expenses are allowed to the licensee as a pass-through. In so doing, the Energy Regulator will ensure the return on investment as derived in the cost of capital calculation explained below is achieved.”

40. These trading margins will be applied to the sum of the cost of sales, plus trading RAB of that trader, plus working capital. Trading margins can be calculated for transmission, distribution, trading or storage customers of a trading licensee.

41. The table below presents a summary of the current or most recent trading margins for each licensee.

<table>
<thead>
<tr>
<th>Licensee</th>
<th>NERSA approved trading margin (R/GJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sasol Gas:</td>
<td></td>
</tr>
<tr>
<td>Supply to end customers</td>
<td>R 8.21</td>
</tr>
<tr>
<td>Supply to traders</td>
<td>R 4.11</td>
</tr>
</tbody>
</table>

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49 Piped-Gas Regulations (2007) s4(3), s4(4)
50 NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, para 3.6.3
51 Regulatory Asset Base
Total charges for gas charged by the different licensees

42. Once the gas energy price and the trading margin have been determined, the methodology to approve maximum prices for piped-gas in South Africa makes a provision for the gas trader to recover the transmission and distribution tariffs as a pass-through. Therefore, the total charges applied by the licensee, will be the maximum price for gas energy, plus tariffs, trading margin and levies and is expressed as follows:\(^{52}\):

\[
\text{Total Price}_{\text{trader}} = GE + TX + DX + TSM + LV
\]

Where:
- \(Trader\) = For customers of a trader;
- \(GE\) = Maximum price for gas energy;
- \(TX\) = Transmission tariff (Pass-through or regulated);
- \(DX\) = Pass-through of distribution (network) tariffs;
- \(TSM\) = Approved trading margin;
- \(LV\) = NERSA levy

43. The figure below compares the maximum total charges for piped-gas to end customers for each of the different licensees. This is based on the estimated maximum gas energy price calculated in Appendix 1 and the relevant approved tariffs and trading margins for the different licensees. It is evident that traders in compressed natural gas, such as NOVO Energy and VGN/NGV have significantly higher total gas charges compared to the other licensees. In the figures that follow we have calculated Sasol Gas’ maximum total gas charges to traders and end customers by zone and customer class as well as the maximum total gas charges for other licensees by customer class.

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\(^{52}\) In some instances, a storage tariff will be added.
Figure 8: Maximum total gas charges to end customers by licensee

Sasol Gas total gas charges to customers

<table>
<thead>
<tr>
<th>Customers in Zone 1</th>
<th>Customers in Zone 2</th>
<th>Customers in Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Class 1</td>
<td>Class 1</td>
</tr>
<tr>
<td>154.46</td>
<td>154.46</td>
<td>155.59</td>
</tr>
<tr>
<td>Class 2</td>
<td>Class 2</td>
<td>Class 2</td>
</tr>
<tr>
<td>144.78</td>
<td>144.78</td>
<td>155.59</td>
</tr>
<tr>
<td>Class 3</td>
<td>Class 3</td>
<td>Class 3</td>
</tr>
<tr>
<td>135.11</td>
<td>135.11</td>
<td>165.91</td>
</tr>
<tr>
<td>Class 4</td>
<td>Class 4</td>
<td>Class 4</td>
</tr>
<tr>
<td>125.44</td>
<td>125.44</td>
<td>146.34</td>
</tr>
<tr>
<td>Class 5</td>
<td>Class 5</td>
<td>Class 5</td>
</tr>
<tr>
<td>115.76</td>
<td>115.76</td>
<td>126.57</td>
</tr>
<tr>
<td>Class 6</td>
<td>Class 6</td>
<td>Class 6</td>
</tr>
<tr>
<td>Maximum charge for gas to customers (R/GJ)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Notes: (i) The price of R117.69/GJ is at 26 March 2013, and needs to be escalated and implemented at 26 March 2014; (ii) The discounts applied to each volume class are Sasol’s proposed reductions; (iii) Margins calculated by NERSA are within a +/- 10% tolerance range. Therefore a trading margin of R8.21/GJ is accepted for 26 March 2014 to 30 June 2014, and R10.41/GJ for 1 July 2014 to 30 June 2015; (iv) Transmission tariffs per zone are for 1 July 2014 to 30 June 2015; (v) ROMPCO transmission tariffs are not added for Zone 2 in Sasol decision document; (vi) Transnet pipeline transmission tariff R8.55/GJ for the period 1 April 2014 to 31 March 2015; (vii) Discounts applied to customer categories are those applied for by Sasol; (viii) The proposed piped-gas levy for 2014/2015 is applied; (ix) We understand that Sasol’s distribution tariff of R11/GJ was for 26 March 2014 to 30 June 2014.
Figure 10. Sasol Gas’ total gas charges to traders by zone

<table>
<thead>
<tr>
<th>Traders in Zone 1</th>
<th>Traders in Zone 2</th>
<th>Traders in Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1</strong></td>
<td><strong>Class 1</strong></td>
<td><strong>Class 1</strong></td>
</tr>
<tr>
<td>151.78</td>
<td>149.20</td>
<td>130.38</td>
</tr>
<tr>
<td><strong>Class 2</strong></td>
<td><strong>Class 2</strong></td>
<td><strong>Class 2</strong></td>
</tr>
<tr>
<td>151.78</td>
<td>149.20</td>
<td>130.38</td>
</tr>
<tr>
<td><strong>Class 3</strong></td>
<td><strong>Class 3</strong></td>
<td><strong>Class 3</strong></td>
</tr>
<tr>
<td>142.10</td>
<td>136.57</td>
<td>131.38</td>
</tr>
<tr>
<td><strong>Class 4</strong></td>
<td><strong>Class 4</strong></td>
<td><strong>Class 4</strong></td>
</tr>
<tr>
<td>132.43</td>
<td>129.90</td>
<td>140.70</td>
</tr>
<tr>
<td><strong>Class 5</strong></td>
<td><strong>Class 5</strong></td>
<td><strong>Class 5</strong></td>
</tr>
<tr>
<td>122.78</td>
<td>120.23</td>
<td>131.38</td>
</tr>
<tr>
<td><strong>Class 6</strong></td>
<td><strong>Class 6</strong></td>
<td><strong>Class 6</strong></td>
</tr>
<tr>
<td>113.06</td>
<td>110.56</td>
<td>111.68</td>
</tr>
</tbody>
</table>

Maximum charge for gas to traders (R/GJ)

- NERSA levy
- Distribution tariff
- Transnet transmission tariff (2014/2015)
- ROMPCO transmission tariff (volume <=120MGJ)
- Sasol Zone 3 transmission tariff
- Sasol Zone 2 transmission tariff
- Trading margin

Notes:
- The price of R117.69/GJ is at 26 March 2013, and needs to be escalated and implemented at 26 March 2014.
- The discounts applied to each volume class are Sasol's proposed reductions.
- Margins calculated by NERSA are within a +/- 10% tolerance range. Therefore a trading margin of R8.21/GJ is accepted for 26 March 2014 to 30 June 2014, and R10.41/GJ for 1 July 2014 to 30 June 2015.
- An additional discount to traders (all resellers of gas including distributors and reticulators) equivalent to 50% of Sasol Gas’s trading margin is applicable.
- Transmission tariffs are per zone for 1 July 2014 - 30 June 2015.
- ROMPCO transmission tariffs are not added for Zone 2 in Sasol decision document.
- Transnet pipeline transmission tariff R8.55/GJ for the period 1 April 2014 to 31 March 2015.
- Discounts applied to customer categories are those applied for by Sasol.
- The proposed piped-gas levy for 2014/2015 is applied.
- We understand that Sasol’s distribution tariff of was for 26 March 2014 to 30 June 2014.
Figure 11. Spring Lights Gas, VGN/NGV and NOVO Energy's total gas charges to end customers by customer class

Total gas charges by other traders in the areas in which they operate

<table>
<thead>
<tr>
<th></th>
<th>Spring Lights Gas</th>
<th>Novo Energy</th>
<th>VGN/NGV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum charge for gas to customers (R/GJ)</td>
<td>Maximum charge for gas to customers (R/GJ)</td>
<td>Maximum charge for gas to customers (R/GJ)</td>
</tr>
<tr>
<td></td>
<td>Class 1</td>
<td>Class 2</td>
<td>Class 3</td>
</tr>
</tbody>
</table>

Sources: (i) NERSA (2015) Reason for decision regarding the application for approval of piped-gas maximum prices by Spring Lights Gas; (ii) NERSA (2015) Reason for decision regarding the application for the extension of piped-gas maximum prices by Virtual Gas Network; (iii) NERSA (2013) Reason for decision regarding the application for approval of piped-gas maximum prices by Virtual Gas Network; (iv) NERSA (2013) Media Statement, Approval of piped-gas transmission tariffs for Sasol Gas for the period 26 March 2014 to June 2015; (v) NERSA (2013) Reason for decision regarding the application for approval of piped-gas transmission tariff by Transnet Pipelines; (vi) NERSA (2013) Proposed levy on the piped-gas and petroleum pipeline industries for 2014/2015. Notes: Spring Lights Gas – (i) GE price as at 1 July 2014; (ii) Includes Sasol Gas’ transmission tariff since SLG uses its pipeline to supply gas to end customers in KZN - Sasol transmission tariff for the period 01 July 2014 to 30 June 2015; (iii) Includes Transnet pipeline tariff since gas is transported from Secunda to Durban via the Transnet pipelines - Transnet pipeline transmission tariff R8.55/GJ for the period 1 April 2014 to 31 March 2015; (v) Discounts applied to customer categories are those applied for by Sasol; (vi) While customer volume categories were prescribed percentage discounts were not, and the same maximum price was applied to all classes of customers; (vii) The proposed piped-gas levy for 2014/2015 is applied. Novo Energy – (i) GE price as at 1 July 2014; (ii) Includes Sasol Gas’ transmission tariff; (iii) The Sasol transmission tariff falls within Zone 1 on the basis that Novo Energy’s customers during this period are all based in Gauteng; (iv) The proposed pipped-gas levy for 2014/2015 is applied. VGN/NGV – (i) GE price as at 1 July 2014; (ii) NERSA decided that discounts from the maximum price are allowed and must be applied in accordance with the non-discrimination provisions of section 22 of the Gas Act - none of these discounts had been applied; (iii) The trading margin is not available in the non-confidential version of the 2013 decision for extension application; (iv) The proposed pipped-gas levy for 2014/2015 is applied.
2.3. DEVELOPMENTS IN THE INDUSTRY SINCE THE PREVIOUS DETERMINATION

44. It is important to consider changes in the industry since the previous determination that might impact on the assessment of whether there is adequate competition in the piped gas market. These can relate to changes in the market structure, policy, legislative and regulatory framework and technological developments, amongst others.

45. The South African gas industry has not seen significant changes in the availability of gas supply or infrastructure since the previous determination. The nature and availability of gas supply and gas infrastructure has remained largely the same with Sasol Gas being the only gas importer/supplier to South Africa and gas distribution infrastructure provider, and one of three transmission pipeline licensees. However, more recently, there have been developments in the South African government's policy on gas utilisation in the economy that could impact on the future growth and development of the industry. Specifically, the South African government has begun efforts to stimulate the South African gas industry by developing a Gas Utilisation Master Plan (“GUMP”) which is aimed at developing and expanding the penetration of gas in the South African energy mix and publishing a Request for Information in relation to a gas-fired power station with a capacity of 3 126MW. The GUMP has not been published yet and the finalisation of the procurement of the gas-fired power station is unlikely to occur in the short term. Therefore, these developments are unlikely to result in any significant change to the availability of gas supplies and infrastructure or indeed the market structure in the short term to have any bearing on the assessment of the adequacy of competition in this report.

46. Since the previous determination there have been significant changes to the pricing methodology used to determine maximum gas prices. The previous market value pricing methodology for natural gas in South Africa came into effect in March 2004 in terms of the Schedule One to the Agreement Concerning the Mozambican Gas Pipeline between the Government of South Africa and Sasol Ltd of 2001. It was to last for a period of 10 years until the 25th of March 2014. This pricing methodology enabled Sasol Gas to discriminate according to the specific circumstances of each customer and charge different prices to similar individual customers. These customers were vulnerable to markedly divergent prices since the pricing was based on the cost of the specific alternative energy source for each individual customer. The new methodology implemented on the 26th of March 2014 is the maximum price methodology as described in detail above, developed by NERSA in terms of the provisions of the Gas Act. The use of the energy indicator and pass-through approaches combined with maximum prices per class of customer enable NERSA to eliminate potential discriminatory pricing by any licensee. In particular, this was done via the specification of standard energy indicators and relevant weightings for the determination of the maximum gas energy price.

47. New entrants at the time of the previous determination have begun operations and additional new entrants have been granted licences. NOVO Energy and VGN/NGV were new entrants at the time of the previous determination having been licenced in 2009 and

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53 The first draft of the GUMP is yet to be published. It is being developed by the IPP office of the Department of Energy.
55 NERSA (2011) Methodology to approve maximum prices of piped-gas in South Africa, para. 3.3
2010 respectively. NOVO Energy begun commercial operations in November 2012 whereas VGN/NGV begum commercial operation during 2013. These licensees' primary focus is on the supply of compressed natural gas for vehicle fuel. The volume of gas supplied by these licensees is small and only accounts for 0.3% of the total volumes supplied in South Africa. Thus the impact of their entry on the market dynamics and competition in the industry has been negligible. A number of new licences have also been granted by NERSA recently. However, as these licensees have not yet begun operations, they are yet to have an impact (if any) on the market dynamics and competition in the industry. The new licensees include Reatile Gas, Molopo SA, Columbus Steel and Spring Lights Gas-CNG.

48. Since the previous NERSA determination of inadequate competition, the government has initiated developments to stimulate the local gas industry. However, these actions are yet to be implemented.

49. Hence, although there have been changes to the methodology for the determination of maximum gas prices, new entrants being granted licences and some commencing commercial activities, this has not had a significant impact on the market dynamics and competition in the South African gas industry.
3. RELEVANT MARKETS

50. A market definition serves to establish a frame of reference used to identify and analyse competitive dynamics. The core objective of defining the relevant markets is to identify significant competitive constraints imposed by a set of products and geographic areas on each other. This section deals with defining the relevant markets in the South African piped-gas industry.

3.1. APPROACH TO MARKET DEFINITION

51. The economic framework for the assessment of the adequacy of competition in the piped-gas industry deals in detail with the approach to be adopted in defining the relevant markets in the piped-gas industry. The approach is summarised below.

52. A market definition serves to establish a frame of reference used to identify and analyse competitive dynamics. The core objective of defining the relevant markets is to identify significant competitive constraints imposed by a set of products and geographic areas on each other. The concepts of demand and supply side substitutability are utilised in order to define the relevant product and geographic markets.

52.1. Demand-side substitution refers to the extent to which consumers substitute the product in question to an alternative product following small, permanent changes in relative prices. For merger cases in particular, the price taken into account will be the prevailing market price, however, this may not be the case if the prevailing price has been determined in the absence of sufficient competition.

52.2. Supply-side substitutability involves the process by which producers currently supplying a different product can switch production to the relevant market in response to a small, but permanent change in relative prices. In order for supply-side substitution to widen the relevant market, suppliers must be able to feasibly and rapidly switch production. The supplier must already be in possession of the skills and assets required to produce the product under consideration and any barriers to entry must be conquerable in a rapid and relatively inexpensive manner. Supply-side substitutability also requires that no considerable sunk costs are incurred in switching production to the relevant market.

53. In essence, the relevant product market includes a product or group of products which serve as substitutes by consumers or are interchangeable. The scope of the relevant geographic market is determined on a similar basis. The relevant geographic market is defined as the area in which the firm or firms concerned are involved in the supply and demand of products and/or services, where competition is sufficiently homogeneous, and

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58 EC. 1997. Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 15
59 EC. 1997. Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 19
60 EC. 1997. Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 20
the conditions of competition are substantially different from the conditions in neighbouring areas.\textsuperscript{62}

54. These principles are applied within the application of the hypothetical monopolist test which is the standard tool used by competition and regulatory authorities to define relevant markets. The test is also referred to as the small but significant, non-transitory increase in prices ("SSNIP") test. A detailed discussion of the test and its application to define both the product and geographic scope of the market is included in the economic framework to assess the adequacy of competition in the piped-gas industry compiled by Genesis Analytics.

3.1.1. Implications of changes in the gas pricing methodology for market definition

55. The correct application of the SSNIP test relies upon the price used for the test being at the competitive level. This poses some difficulty in circumstances where a firm is a monopolist or has some degree of market power. This might result in the prices observed in the market being above the competitive level. This issue is illustrated by a famous case, the so-called ‘cellophane fallacy.’ This fallacy proposes that that a high cross-price elasticity of demand between two products in which one firm is the only seller in the correctly defined product market, might lead to too wide a definition of the relevant market. This is due to the supplier already having exercised market power by raising the price of the product above the competitive price, causing in the SSNIP test results indicating a higher likelihood of switching than is actually the case. The SSNIP-based higher price leads customers to switch in case of further price increases above the current, which is the monopoly, price. Hence there is a risk of mistaking the monopolist’s inability to exercise market power by raising its price above the current price for an inability to raise the price significantly above the competitive price, which the supplier may already have done. The high elasticity of substitution may in itself be an indication of the market power exercised by the only seller in the correctly defined market. Therefore, caution should be exerted when applying the SSNIP test to non-merger cases, and should not be taken as decisive proof for the delineation of a relevant market.\textsuperscript{63}

56. This is precisely the issue with regard to the application of the SSNIP test in the South African piped-gas industry. The previous Market Value Pricing regime allowed Sasol Gas to effectively legally price discriminate between similar customers – in other words, customers that would consume similar volumes of gas would be charged different prices based on the cost of alternative energy sources applicable to that customer. For example, if the alternative energy source for a customer was heavy fuel oil, the customer would be charged a gas price based on the price of heavy fuel oil. A customer with a similar level of demand, location and even load profile, but whose alternative energy source was coal would be charged a price based on the price of coal. Heavy fuel oil is significantly more expensive than coal resulting in customers with similar levels of demand and other relevant factors, being charged significantly different prices. This ultimately meant that Sasol Gas was able to price discriminate in a near-perfect manner and gas prices in South Africa were higher and more divergent than those prevailing in a competitive market.

\textsuperscript{62} EC. 1997. Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 8.

57. This pricing regime came to an end in March 2014 and was replaced with a new pricing methodology designed to eliminate price discrimination by creating a single maximum gas price per customer category. The new pricing methodology is explained in detail in the section on the maximum prices for gas energy (section 2.2.1). However, the new pricing regime meant significant changes to prices charged by Sasol Gas to many customers. A portion of customers would face price decreases whereas others would face significant price increases. To minimise the impact of these price increases, NERSA allowed Sasol Gas to phase in increases over time as shown in the Table below. For example, customers facing a price increase of between 15% and 30% would see their prices increasing by 15% on the 26th of March 2014, with the remainder of the increase phased in quarterly over the following year. Prices for most customers facing price increases above 15% would fully reflect the new pricing regime in March 2017 with only a few customers with price increase adjustments after this time.

Table 4. Transitional mechanism for price increases

<table>
<thead>
<tr>
<th>Price increase:</th>
<th>15% increase on the 26 March 2015; Remainder quarterly adjustments between 26 March 2015 and 25 March 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 15% &lt;=30%</td>
<td>15% increase on the 26 March 2015; 15% increase quarterly adjustments between 26 March 2015 and 25 March 2015; Remainder quarterly adjustments between 26 March 2015 and 25 March 2017</td>
</tr>
<tr>
<td>&gt;30% &lt;=45%</td>
<td>15% increase on the 26 March 2015; 15% increase quarterly adjustments between 26 March 2015 and 25 March 2015; Remainder quarterly adjustments between 26 March 2015 and 25 March 2017; Remainder spread over an appropriate time period to be approved by NERSA</td>
</tr>
</tbody>
</table>

Source: NERSA (2013) Reason for decision regarding Sasol Gas maximum gas prices para 8 (i)

58. As the relevant prices reviewed in this assessment cover observations from both the previous and new pricing approach and that the impact of the new pricing approach has not been fully implemented, it is likely that the prices observed in the industry are not at the competitive level. Further, the total gas charges to the customer do not only include the maximum gas price, but also include tariffs for transmission and distribution as well as a trading margin. As Sasol Gas is the owner and operator of the gas transmission and distribution infrastructure and NERSA’s regulation of these tariffs is fairly light handed, where transmission is concerned as per its mandate and not prescribed where distribution is concerned, the possibility remains that final gas charges in South Africa are above the competitive level. Given the issue that this poses for the use of the SSNIP test, pricing analysis must be used together with other factors to define relevant markets in the piped-gas industry. Any conclusions drawn from the analysis of the price and price differences is carefully considered and taken in light of the conclusions from other factors that impact the extent of the product and geographic scope of the market.

3.2. PRODUCT MARKET

59. In defining the relevant product markets for piped gas in South Africa, we consider delineating the market on a number of different bases. In the sections below, we examine the suitability of market definitions according to the following:

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64 NERSA (2013) Reason for decision regarding Sasol Gas maximum gas prices para 8 (i)
65 Although Transnet Pipelines owns and operates the Lily pipeline, Sasol Gas is the only licensee with access to this pipeline and the bulk of the capacity on the pipeline is used by or allocated to it. The Rompco pipeline is part owned by Sasol and is operated by Sasol Gas.
59.1. Alternative energy sources to piped-gas;

59.2. Activities in the gas market chain: the transmission, distribution and trading of gas; and

59.3. Customer segmentation: different categories of customers.

3.2.1. **Alternative energy sources to piped-gas**

60. NERSA’s energy indicator approach to determining the maximum prices for gas energy is based on a weighted combination of energy price indicators for coal, diesel, electricity, heavy fuel oil and liquefied petroleum gas. The inclusion of prices for other energy fuels in the methodology for calculating gas prices led certain stakeholders to suggest during the previous assessment that these alternative energy sources belong in the same market as piped gas. However, the distinctive characteristics of piped gas together with other factors clearly indicate that piped gas belongs in a separate market to other energy sources.

60.1. The rationale for including prices of other energy sources in NERSA’s equation for the maximum price for gas energy was fundamentally to reach an estimate of the value of a gas molecule. As natural gas is not produced and traded locally, there is no price indicator or measure that can be used as the basis for the price. Other markets where gas is more readily available and traded in significant volumes, the price is determined by market forces. These price indices could be used as the basis for the local gas price however these prices fluctuate based on supply and demand balances in other countries and therefore would not accurately reflect South African circumstances. Further, the fluctuations in the international prices would introduce uncertainty for both suppliers and customers who would not be able to predict the price they could charge or be charged for gas. As the gas industry is still in the development stage, it is important for prices to facilitate new entry. The uncertainty of fluctuating prices might act as a deterrent to new entrants who might not be able to achieve the required returns. Although, the maximum gas price is based on the price of other energy sources, it does not mean that these energy sources are substitutes for piped-gas.

60.2. The price of gas energy differs considerably from the prices of other fuels. As indicated in Table 5 below, the gas energy price per gigajoule as calculated in Appendix 1 is significantly less than the average price per gigajoule of other energy sources from July 2014 to June 2015, and considerably greater than the average price per gigajoule over this period for coal. It is noted that this price comparison is based only on the price for the energy and does not include other charges such as that for transmission/distribution or transport.

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66 NERSA, Methodology to approve maximum prices of piped-gas in South Africa, October 2011, p10, par 3.1
Table 5: Average energy prices per gigajoule, July 2014 to June 2015

<table>
<thead>
<tr>
<th>Energy Form</th>
<th>Rands per GJ</th>
<th>% difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Coal</td>
<td>R 26.80</td>
<td>-79%</td>
</tr>
<tr>
<td>Heavy Fuel Oil</td>
<td>R 200.55</td>
<td>55%</td>
</tr>
<tr>
<td>Electricity</td>
<td>R 196.53</td>
<td>52%</td>
</tr>
<tr>
<td>Diesel</td>
<td>R 179.04</td>
<td>39%</td>
</tr>
<tr>
<td>LPG</td>
<td>R 182.28</td>
<td>41%</td>
</tr>
<tr>
<td>Piped-gas</td>
<td>R 128.98</td>
<td></td>
</tr>
</tbody>
</table>

Source: See Appendix 1

60.3. Customers are likely to face considerable switching costs in changing from gas to other energy sources. Industrial customers would have invested in specific infrastructure to enable their production process to convert to the use of gas energy in cases of existing operations, and may no longer be able to accommodate the previous fuel source. Considering the switching costs, it is unlikely that they would be willing to change energy source in the event of small but significant changes in the price of gas relative to other energy sources. Further, we understand that when Sasol Gas first started supplying gas into the South African market that in order to stimulate demand it provided incentives for customers to convert to gas such as setting its prices attractively. Therefore, it will be difficult for customers that converted to gas to switch back to the other energy sources.

60.4. Gas energy also provides unique benefits to customers. Gas energy offers a consistent quality and level of energy content, and enables more flexible temperature control compared to other sources of energy. Piped gas is, on the whole and when handled correctly, safer than many other fuels. It is lighter than air and so, unlike liquid fuels, safely disperses into the atmosphere in the event of a spill or accident. The more economic and secure storage method for gas reduces the risk of spills and theft compared to other types of fuels. Gas energy is also regarded as a cleaner energy source than other fuel sources. The cleaner nature of gas energy also benefits vehicular customers by extending service intervals and reducing maintenance costs due to the lack of lead or benzene content in the fuel to affect vehicle sparkplugs.

61. It is for these reasons that piped-gas is defined to be in a separate market to other energy sources including coal, diesel, electricity, heavy fuel oil and liquefied petroleum gas.

3.2.2. Separate markets for the transmission, distribution and trading of gas

62. The Gas Act distinguishes between the transmission, distribution, trading and reticulation of piped-gas, with reference to the operating pressure of pipelines up to the point of ultimate consumption.

62.1. Transmission is defined in terms of the Gas Act as “the bulk transportation of gas by pipeline supplied between a source of supply and a distributor, reticulator, storage company or eligible customer, or any other activity incidental thereto, and “transmit” and “transmitting” have corresponding meanings”.  

62.2. Distribution is defined in terms of the Gas Act as “the distribution of bulk gas supplies and the transportation thereof by pipelines with a general operating pressure of more than 2 bar gauge and less than 15 bar gauge or by pipeline with such other operating pressure as the Gas Operator may permit according to criteria prescribed by regulation to points of ultimate consumption or to reticulation systems, and any other activity incidental thereto, and “distribute” and “distributing” have corresponding meanings”.  

62.3. Trading is defined in terms of the Gas Act as “the purchase and sale of gas as a commodity by any person and any services associated therewith, excluding the construction and operation of transmission, storage and distribution systems, and “trading services” has a corresponding meaning”.  

63. It is therefore clear that transmission, distribution and trading involve fundamentally different activities. Transmission pipelines function at a higher operating pressure and are for transport of gas primarily to distributors, reticulators, large industrial customers or storage companies. Whereas distribution pipelines operate at a lower pressure and are for the transport of gas to points of ultimate consumption. There are instances where customers are supplied from by the transmission pipelines, however, this classification still has some grey areas and is therefore not considered in this assessment. Trading on the other hand does not involve the provision of an infrastructure service and relates purely to the purchase and sale of gas. Further, the definition of trading specifically excludes the construction and operation of transmission, storage and distributions systems.  

64. There is only one integrated transmission and distribution infrastructure provider in the South African gas market, and two other transmission infrastructure providers (one of which is part owned by Sasol), whereas there are a number of traders supplying gas to various categories of customers. Sasol Gas owns and operates the network of gas transmission facilities in the Gauteng/Mpumalanga/Free State region, as well all the distribution pipelines, which are licensed as a number of distribution areas. Currently, there are nine licensed gas traders in South Africa who have acquired licenses to trade piped-gas in the South African market including Sasol Gas, Spring Lights Gas, VGN/NGV, Novo Energy, Columbus Stainless Steel, Reatile Gastrade, Molopo and Spring Lights – CNG. The last three have not yet commenced commercial activities.  

65. Specific tariffs or prices are charged for each of the separate levels of gas supply discussed above. Tariffs relate to the charges for the network or gas service to any customer, and are therefore applied to the transmission and distribution segments of the supply chain. The gas price, however, refers to the charge for a gas molecule to a

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70 The Gas Act (Act No. 48 of 2001), s1  
71 The Gas Act (Act No. 48 of 2001), s1  
72 The Gas Act (Act No. 48 of 2001), s1  
73 NERSA (2011) Discussion Document, Determination of the inadequate competition in the piped-gas industry as contemplated in chapters 2 and 3 of the Competition Act, 1998 (Act No.89 of 1991), p.9, para 3.7(d) and 3.7(e,f)
distributor, reticulator or final consumer.\textsuperscript{74} Therefore, from both a demand and supply side perspective, there is no substitutability between these three activities.

66. International jurisdictions have defined distinct markets for the transmission, distribution, and supply of gas. Particularly, the EC defined separate markets for the transmission and distribution transport markets due to the differences that prevailed in terms of customers, distances, and regulations between the two types of networks.\textsuperscript{75} The various product markets defined by the EC were therefore on the basis of customers’ use of gas, their consumption volume, the incentive and ability to switch between suppliers, the connection to transmission networks, and the purchase price.\textsuperscript{76} A more detailed summary of the relevant cases can be found in Appendix 2.

67. Similarly, in the South African context, the licensing framework provided for in the Gas Act and imposed by the regulator, differentiates between transmission, distribution, storage and trading activities in the piped-gas market. Further, a key distinguishing factor between transmission and distribution in particular is that the obligations placed on licenses for the different activities also differ. There is a mandatory third party access to the transmission pipelines however a voluntary arrangement applies to distribution pipelines. Distribution licensees are also granted exclusivity in the in the construction and operation of distribution network services in the geographic area that the network is located.\textsuperscript{77} These regulatory delineations and differences provide a further justification for the definition of separate product markets for the respective activities.

68. Therefore, based on the specific definitions in the Gas Act; licence conditions the manner in which markets are delineated in international jurisdictions; the structure of the South African gas market; and pricing of different activities in the supply chain – we have defined separate markets for the transmission, distribution and trading of gas.

69. In terms of section 21(1)(p) of the Gas Act, NERSA is mandated to approve maximum prices for distributors, reticulators and all classes of consumers where it is found that there is inadequate competition. Separate markets have been defined for the transmission, distribution and trading of gas. ROMPCO and Transnet own transmission pipelines however, Sasol Gas is dominant in transmission and has a monopoly in distribution. Even if these markets are disaggregated further, Sasol Gas would still be dominant, therefore, we only focus on a further delineation of the trading of gas in which distributors and reticulators are active.

69.1. Both gas distribution and reticulation facilitates the supply of gas to end customers. The distinguishing feature between the two relates to the general operating pressure of the pipelines, which is no more than 2 bar gauge for gas reticulation, and between 2 and 15 bar gauge for gas distribution.\textsuperscript{78}

69.2. Voluntary third party access (“TPA”) to distribution networks is possible with an objective to promote competition in the gas industry; however, the uptake of TPA to distribution networks in South Africa has been disappointing.\textsuperscript{79} Therefore, the

\textsuperscript{74} The Gas Act (Act No. 48 of 2001), s1
\textsuperscript{75} EC. 2010. ENI, 39.315, footnote 25
\textsuperscript{77} The Gas Act (No. 48 of 2001), s21(1)(s)
\textsuperscript{78} Competition Tribunal, Republic of South Africa, Case No: 016402, Competition Commission vs Egoli Gas, p.5, para 2.3
\textsuperscript{79} E. Teljeur; F. Sheik; S. Kagee (2015) Third party access to distribution: Lessons from South Africa. WGC Paris, p. 6
presence of the ability to do so has not facilitated competition in the distribution
segment of the supply chain.

69.3. Gas reticulation service provisions do not fall within NERSA’s regulatory ambit in
terms of the Gas Act, and instead, falls under the executive authority of local
government.

3.2.3. Further delineation of the market for trading of gas

70. The market for the trading of gas can itself, be delineated based on the type of customer
being supplied. In the South Africa gas industry, there are two categorisations of
customers. Firstly, customers are either end customers that are the final consumers of the
gas purchased or traders that sell gas to end customers or. Secondly, end customers can
be further delineated either by volume categories (as defined in the gas regulations) or
based on their activities and use of gas such as industrial, residential and vehicular.

Separate markets for trading of piped-gas to traders and trading to end-
customers

71. Sasol Gas is the sole supplier of piped-gas to traders such as Spring Lights Gas, Novo
Energy, VGN/NGV and Reatile Gastrade. These traders, as well as Sasol Gas itself,
supply gas to end customers which may be categorised as industrial, residential or
vehicular customers. In addition, Egoli Gas, a reticulator, is also involved in the supply of
gas to small industrial and primarily residential customers. A fundamental difference
between these traders and end customers is that traders on-sell the gas to other
customers whereas end customers use gas for final consumption. This is a key feature
that enables the gas supplier to distinguish between these two categories of customers.

72. Sasol Gas as the only supplier of gas to traders has translated this difference in its
approved maximum total charges for gas (including prices and tariffs) by providing a
discount to traders of 50% on the trading margin. Once the other gas prices and tariffs are
added to the discounted trading margin, one can infer this to be the ‘maximum total
charge’ for traders. The maximum gas charges per transmission zone, including the
trading margin, but excluding both transmission and distribution tariffs, are shown in the
table below. Overall, there is a 3-5% difference in the total charges for traders and end
customers. Even though the percentage difference between the approved total gas
charges for traders and end customers is small, the discount applied to the trading margin
for traders remains key difference between the charges applied to traders and end
customers.

Table 6. Sasol Gas’ maximum gas charges excluding tariffs for traders and end customers

<table>
<thead>
<tr>
<th>Class</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traders</td>
<td>Customers</td>
<td>% difference</td>
</tr>
<tr>
<td>1</td>
<td>151.78</td>
<td>156.99</td>
<td>-3%</td>
</tr>
<tr>
<td>2</td>
<td>151.78</td>
<td>156.99</td>
<td>-3%</td>
</tr>
<tr>
<td>3</td>
<td>142.10</td>
<td>147.31</td>
<td>-4%</td>
</tr>
<tr>
<td>4</td>
<td>132.43</td>
<td>137.64</td>
<td>-4%</td>
</tr>
</tbody>
</table>
73. The actual average total gas charges for traders and end customers charged by Sasol Gas also show differences between traders and end customers. Table 7 below illustrates the difference between the actual average prices charged to traders and end customers in 2012, 2013 and 2014. This demonstrates that the actual total gas charges for traders differ significantly from those for end customers.

74. Total gas charges for traders in Classes 2 and 3 were 40% and 25% lower than those compared to end customers in 2012 and 2013 respectively. Similarly, for Class 6 the price charged to traders was lower than the price charged to end customers in both periods of 2014 and 2013. However, there is some inconsistency in these results as traders in Class 4 and Class 5 were charged a higher price than end customers, during the previous dispensation between 2012 and 2014. This is a result of the asymmetric treatment that the Agreement concerning the Mozambican Gas Pipeline between the Government of South Africa and Sasol Ltd of 2001 allowed, containing as it did a specific price cap for resellers that was referenced to an existing reseller’s contract, which differed from the overall gas pricing method of alternative fuel related market value pricing.

75. Moreover, It must be noted that the conclusions that one can draw from the analysis of the actual prices may be not be completely reliable as during this period a new pricing methodology has been implemented, in some cases only partially, and prices do not yet fully reflect the changes required by the new methodology. This is explained in further detail in section 3.1.1.

76. We therefore find that the market should be segmented into a market for the trading of piped-gas to traders and a market for the trading of piped-gas to end customers. This is due to the nature of the difference between customers in these segments; the total charges analysis; and the fact that traders have no alternative gas suppliers.

<table>
<thead>
<tr>
<th>Class</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trader</td>
<td>End customer</td>
<td>% difference</td>
</tr>
<tr>
<td>Class 1</td>
<td>R 172.75</td>
<td>-39.9%</td>
</tr>
<tr>
<td>Class 2</td>
<td>R 103.02</td>
<td>R 135.28</td>
</tr>
<tr>
<td>Class 3</td>
<td>R 88.13</td>
<td>R 64.55</td>
</tr>
<tr>
<td>Class 4</td>
<td>R 49.44</td>
<td>R 44.91</td>
</tr>
<tr>
<td>Class 5</td>
<td>R 217.85</td>
<td>R 201.33</td>
</tr>
<tr>
<td>Class 6</td>
<td>R 205.74</td>
<td>R 194.01</td>
</tr>
</tbody>
</table>
Class 4 | R 120.55 | R 99.53 | 21.1% | R 102.54 | R 84.62 | 21.2% 
Class 5 | R 75.65 | R 63.09 | 19.9% | R 69.87 | R 66.08 | 5.7% 
Class 6 | R 54.45 | R 63.81 | -14.7% | R 61.81 | R 70.38 | -12.2% 

Source: Genesis calculations based on information received from NERSA

Notes: The average prices for 2014 are split into two periods, January – March 2014 and April 2014 – December 2014. Prior to 26 March 2014, Sasol Gas’ end customers were charged prices per site. Following the change in the regulatory dispensation on 26 March 2014, Sasol Gas’ end customers were able to switch to being charged a price based on their combined volumes across their sites. Average prices are thus calculated per site for end customers for 2012, 2013 and the period January 2014 – March 2014, and across sites for end customers for the period April 2014 – December 2014. Traders were consistently charged a price based on their combined volumes across their sites.

77. Support for this market segmentation can be found in other jurisdictions. For example, distinct markets have been defined by the EC for the wholesale and retail supply of gas. The wholesale supply of gas encompasses the sale of gas acquired from producers, to wholesalers or downstream distributors.\(^8^0\) The retail supply of gas is commonly divided into separate markets for the supply of gas to electricity plants, large industrial customers, small industrial customers, and household customers\(^8^1\), all of which constitute the supply of gas to end-customers.\(^8^2\) A more detailed discussion of the relevant case precedent can be found in Appendix 2.

Separate markets for the trading of gas to different end customers

78. The market for the trading of gas to end customers could be segmented based on customer volume classes, which are prescribed in the Piped-gas Regulations of 2007.\(^8^3\) The trading of gas market could also be delineated between customer types on the basis of their use of gas, i.e. between industrial, vehicular, and residential customers. The latter approach is likely to be a more appropriate market segmentation for the reasons that follow.

79. The Piped-gas Regulations introduced customer volume classes to categorise customers by their annual gas consumption. The definition of the customer volume classes are displayed in Table 8 below.

Table 8: Customer volume classes as classified by annual gas consumption in gigajoules

<table>
<thead>
<tr>
<th>Customer volume class</th>
<th>Annual gas consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Less than 400 GJ pa</td>
</tr>
<tr>
<td>Class 2</td>
<td>401 GJ pa to 4 000 GJ pa</td>
</tr>
<tr>
<td>Class 3</td>
<td>4 001 GJ pa to 40 000 GJ pa</td>
</tr>
<tr>
<td>Class 4</td>
<td>40 001 GJ pa to 400 000 GJ pa</td>
</tr>
<tr>
<td>Class 5</td>
<td>400 001 GJ pa to 4 000 000 GJ pa</td>
</tr>
<tr>
<td>Class 6</td>
<td>&gt; 4 000 000 GJ pa</td>
</tr>
</tbody>
</table>


80. There is some basis for the market for the trading of gas to be segmented by customer volume classes. For instance where clear price differentials exist between different

\(^{80}\) EC. 2010. E.ON Gas. 39.317, para.16

\(^{81}\) See EC. 2013. EPH/Stredoslovenska Energetika. M.6984, para. 27; EC. 2011. ENI/Acegasaps/JV. M.6068, para. 18; EC. 2010. ENI. 39.315, para. 25

\(^{82}\) In this instance, wholesalers are referred to as traders and retailers are referred to as end customers.

volume categories. In other markets traders tend to offer customers in higher volume classes lower prices due to the scale efficiencies traders achieve in supplying gas to such larger customers and the greater countervailing power large customers wield. In such markets customers in higher volume classes are also more commonly traders themselves as opposed to customers in lower volume classes that are predominantly end customers.

81. However, segmenting the market on the precise customer volume classes prescribed by the Piped-gas Regulations would be inappropriate. The conditions in the South Africa piped-gas market are different, as traders do not necessarily buy much larger volumes than large customers and as price differentials in the South African market prior to the end of market value pricing was linked to the alternative fuel rather than to volumes. The manner in which these volume classes have been defined has also resulted in rather arbitrary volume categories. The volume class categories do not advance linearly or cover similar ranges of annual gas consumption. For the present class 6, the consumption levels range from 4MGJ/annum to infinity, whereas the remaining 5 classes are bounded by a logarithmic scale for which the formula used is \((4\times10^X(X+1))\) in which \(X\) represents the class number. Customers in the gas trading market are thus more heavily grouped in the classes that cover larger ranges. Segmenting the market on the basis of customer volume classes may therefore be an artificial approach to determining the relevant markets for the trading of gas.

82. Alternatively, the trading of gas market could also be segmented on the basis of customers’ use of gas. The market could be divided between industrial customers that utilise gas in their production process, residential customers that use gas for cooking and heating purposes, and vehicular customers that purchase gas as vehicle fuel. This segmentation is supported by the following distinctive characteristics of industrial, vehicular and residential customers.

82.1. Industrial, vehicular and residential customers are differentiated by the manner in which gas is supplied to them by traders. Industrial customers must be equipped to allow gas to be supplied for and used in their production processes. This conversion is conducted at their premises.

82.2. Gas is supplied to industrial customers through transmission and distribution pipelines directly to their premises.\(^84\)

82.3. For residential customers, traders provide the necessary gas transportation infrastructure to the edge of the residents’ premises. The internal pipe work is the responsibility of the resident.\(^85\)

82.4. Vehicular customers tend to have their vehicles converted to run on gas at conversion and maintenance centres operated by traders.\(^86\) Vehicular customers tend to collect their gas from filling stations, such as NGV’s filling station in Langlaagte.\(^87\)


82.5. Hence, an industrial customer would not be able to readily switch to acquiring gas from a vehicular fuelling station. Residential customers differ from both industrial and vehicular customers and are supplied gas through lower pressure reticulation pipelines.

82.6. Industrial, vehicular and residential customers are also distinguished by the volume of gas they purchase. Industrial customers tend to require a larger volume than individual vehicular customers. As residential customers generally use gas for heating and cooking, they may need to purchase considerably less gas compared to other players in the market.

82.7. The tariff and pricing structure also differs between the different customers. As discussed, for industrial customers the total gas charges are made up of a gas price, tariffs for distribution and transmission, a trading margin and a levy. Actual pricing for vehicle customers is based, at least in NOVO Energy’s case, on the petrol price with the price being designated in Rands per litre (equivalent) as opposed to Rands per GJ. Finally, for residential customers of Egoli Gas, the total gas charges per month include a monthly basic charge and a consumption charge per GJ. There are also once-off charges for connection, a deposit and wayleave costs.

82.8. This market segmentation is also supported by traders’ classification of the customer types that they service. Novo Energy differentiates between markets for transport, industrial, domestic, commercial and power generation. VGN/NGV also differentiates between industrial customers and transport (vehicular) customers.

83. It is for these reasons that we define separate markets for the trading of gas to (i) industrial customers, (ii) residential customers and (iii) vehicular customers.

3.2.4. Summary

84. Based on the findings above, we have defined the following product markets:

84.1. A market for the transmission of piped-gas;

84.2. A market for the distribution of piped-gas;

84.3. A market for the trading of piped-gas to traders;

84.4. A market for the trading of piped-gas to industrial customers;

84.5. A market for the trading of piped-gas to vehicular customers; and

84.6. A market for the trading of piped-gas to residential customers.

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92 We understand that some industrial customers may use some of the gas supplied to them by traders for fuel for their vehicle fleets and other equipment. This use is considered part of the market for trading of gas to industrial customers and not part of the vehicle customers market. All industrial customers do not use gas in this way. Further, the key distinction between vehicle customers and industrial customers that use some gas supply for vehicle fuel is that the former purchase vehicle fuel from a gas refuelling station.
85. However, we only consider the scope of the geographic market for the trading of piped-gas to traders, trading of piped-gas to industrial customers and the trading of piped-gas to vehicular customers product markets as it is not necessary in terms of NERSA’s mandate regarding maximum gas prices for it to assess whether there is inadequate competition in the markets for the transmission and distribution services. With respect to the market for residential customers, as these customers are primarily supplied by reticulators which fall outside the scope of NERSA’s mandate, competition in this market is also not assessed.

86. It is also important to note that Egoli Gas is not considered as a participant in any of the markets analysing the trading of gas to end customers. It operates a reticulation network which is regulated by the relevant municipality in Gauteng. This network is primarily used to supply gas purchased from Sasol Gas to residential customers. Further, as Egoli Gas is not a licensed trader, it cannot supply piped-gas in competition with other traders outside of its reticulation network.

3.3. GEOGRAPHIC MARKET

87. The figure below is a representation of the areas in which traders in South Africa supply piped-gas to end customers. In particular, the region labeled A, represents Sasol’s supply locations in the Gauteng/Mpumalanga/Free state region. The region labeled B represents the east of Johannesburg in Gauteng in which Novo Energy’s customers are primarily based. Similarly, the region labeled C represents the area in Gauteng in which VGN/NGV supplies piped-gas to end customers. The region labeled D represents the KwaZulu-Natal area in which both Sasol Gas and Spring Lights Gas are suppliers of piped-gas.

Figure 12: Locations of traders supplying piped-gas as natural gas or CNG in South Africa
88. Given the geographic spread and location of traders, we assess the scope of the geographic market for the trading of piped-gas to traders, the market for trading of piped-gas to industrial customers and the market for the trading of Compressed Natural Gas to vehicle customers.  

### 3.3.1. Market for the trading of piped-gas to traders

89. Sasol Gas is the only supplier of piped-gas to traders in South Africa. It is also the owner and/or operator of the transmission and distribution networks through which traders are supplied. Transnet owns a single transmission pipeline, which is currently used exclusively by Sasol Gas. Only one trader – NOVO Energy – procures a portion of its gas supply from an independent source. NOVO Energy has a project at a landfill site in the Ekurhuleni Municipality from which it harvests methane and, after compressing this gas, dispenses it to various vehicle customers. However, we understand that this gas is used only for vehicle customers and therefore is not supplied to industrial customers or other traders. By contrast, traders VGN and NGV procure gas from Egoli Gas which is supplied by Sasol Gas.

90. As traders are geographically focused, with NOVO Energy and VGN/NGV primarily focused on the Gauteng/Mpumalanga/Free State region and Spring Lights Gas on KwaZulu-Natal, it may be appropriate to segment the market into the Gauteng/Mpumalanga/Free State and KwaZulu-Natal regions. However, as there are no alternative suppliers in either region, the scope of the geographic market for the trading of gas to traders need not be further refined.

91. Irrespective of whether a single market is defined or whether this market is defined more narrowly by splitting it into two markets viz. the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal, the conclusion of the assessment of inadequate competition will be the same. Sasol Gas is the only supplier of gas to traders and therefore, there is no competition in the market for trading of gas to traders. This will be discussed in further detail in the section on the assessment of inadequate competition.

### 3.3.2. Market for the trading of piped-gas to industrial customers

92. Piped-gas is only available in four out of nine provinces in South Africa, viz. KwaZulu-Natal, Gauteng, Mpumalanga and the Free State, as shown in the Figure above. Therefore, there is the potential for the market to be defined more narrowly based on these geographical regions. A number of different factors should be taken into account in making such an assessment. These factors primarily include prices and transport costs in the different regions and the ability of customers to switch to suppliers outside the region.

93. A consideration of these factors does not provide a definitive answer on whether the market for the trading of gas to industrial customers should be a single market including all regions where gas is available or should be narrowly defined into two markets i.e. the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal.

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93 It is important to note that vehicle customers use compressed natural gas. Piped-gas as is, without compression is not a substitute for compressed natural gas.

94. Only Sasol Gas trades in all areas where piped-gas is available. Other licensees including NOVO Energy and VGN/NGV are limited by their licence conditions to specific areas where they are allowed to trade.

94.1. NGV is limited to the trading of gas in the Langlaagte region of the City of Johannesburg.\textsuperscript{95}

94.2. VGN is restricted to the trading of gas in 20 geographic areas within various municipalities including City of Johannesburg Metropolitan Municipality; Tshwane Metropolitan Municipality; Ekurhuleni Metropolitan Municipality; Metsimaholo Local Municipality, eThekwini Metropolitan Municipality; and uMhlathuze Local Municipality.\textsuperscript{96} A full list is provided in the table below. It is clear from the list that VGN/NGV is able to trade in gas in limited areas of Gauteng, KwaZulu-Natal, Free State and Mpumalanga. However, customer sales data for VGN/NGV reveals that it only has actual industrial customers in Gauteng and none in KwaZulu-Natal, Mpumalanga and the Free State.\textsuperscript{97}

94.3. NOVO Energy is also limited by its licence conditions in the areas in which it can trade. These include some areas of the following municipalities: eThekwini Metropolitan Municipality; Ekurhuleni Metropolitan Municipality; City of Johannesburg Metropolitan Municipality and the Highland Exploration and Production area.\textsuperscript{98} As shown in the table below, NOVO Energy is able to trade gas in limited areas of Gauteng, KwaZulu-Natal and Free State. However, based on customer sales data for NOVO Energy, it only has industrial customers in Gauteng and none in KwaZulu-Natal and the Free State.\textsuperscript{99}

<table>
<thead>
<tr>
<th>Licence area</th>
<th>Province</th>
<th>Licence area</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Johannesburg Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Germiston West of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Pretoria of the Tshwane Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Rosslyn of the Tshwane Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Alrode of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Sasolburg of the Metsimaholo Local Municipality</td>
<td>Free State</td>
</tr>
<tr>
<td>Babelegi of the Tshwane Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Wadeville of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Krugersdorp of the Mogale City Local Municipality</td>
<td>Gauteng</td>
<td>Vereeniging of the Emfuleni Local Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Benoni/Boksburg of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Springs of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Kempton Park of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Witbank of the Emalahleni Local Municipality</td>
<td>Mpumalanga</td>
</tr>
<tr>
<td>Germiston East of the</td>
<td>Gauteng</td>
<td>Vanderbijlpark of the</td>
<td>Gauteng</td>
</tr>
</tbody>
</table>

\textsuperscript{95} NERSA (2009) Licence conditions for trading in gas by NGV Gas (Pty) Ltd, para 1.1.
\textsuperscript{96} Annexure A of VGN’s licence conditions
\textsuperscript{97} Appendix 3 has a list of VGN/NGV customers and their locations.
\textsuperscript{98} NOVO Energy application for amendment to licence conditions, 18 June 2012, section D, question 16
\textsuperscript{99} Appendix 3 has a list of NOVO Energy customers and their locations.
Licence area | Province | Licence area | Province
---|---|---|---
Ekurhuleni Metropolitan Municipality |  | Emfuleni Local Municipality |  
Meyerton of the Midvaal Local Municipality | Gauteng | Durban of the eThekwini Metropolitan Municipality | KwaZulu-Natal  
Olfantsfontein of the Ekurhuleni Metropolitan Municipality | Gauteng | Richards Bay of the uMhlathuze Local Municipality | KwaZulu-Natal  

**Novo Energy**

<table>
<thead>
<tr>
<th>Licence area</th>
<th>Province</th>
<th>Licence area</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyerton of the Midvaal Local Municipality</td>
<td>Gauteng</td>
<td>Pretoria of the Tshwane Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Durban of the eThekwini Metropolitan Municipality</td>
<td>KwaZulu-Natal</td>
<td>Cottesloe of the City of Johannesburg Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Piertermaritzburg of the Msunduzi Local Municipality</td>
<td>KwaZulu-Natal</td>
<td>At the Virginia, Welkom, Theunissen, Ventersburg in the Highland Exploration and Production area</td>
<td>Free State</td>
</tr>
<tr>
<td>Germiston East Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
<td>Benoni area of the Ekurhuleni Metropolitan Municipality</td>
<td>Gauteng</td>
</tr>
</tbody>
</table>

**Sources:** (i) NOVO Energy application for amendment to licence conditions, 18 June 2012, section D, question 16; (ii) Licence conditions for Trading in Gas for Natural Gas Vehicles Pty, Ltd; par. 1.1; (iii) Annexure A of Licence conditions for Trading in Gas for Virtual Gas Networks Pty, Ltd; (iv) NERSA (2014) The application for the extension of piped-gas maximum prices by Virtual Gas Network (Pty) Ltd, para. 3.3

95. The limited geographic reach of some licensees suggests that the market should be segmented into narrower geographic markets. However, the fact that they are able to trade in other areas where Sasol Gas is also active, suggests that it could be defined as a single market.

96. An analysis of the structure of gas charges and prices provides conflicting evidence of whether there should be a single market or separate geographic markets. The structure shows that a large proportion of the maximum price (the gas energy price) is the same for customers in all regions with only the transmission tariffs, which are a relatively smaller proportion of the total gas charges, differing by region. On the other hand, there are significant differences between the actual average prices in the different regions which could indicate separate geographic markets.

96.1. A large portion of the maximum total gas charges approved by NERSA do not differ by region – licensees active in multiple regions apply the same maximum price for the gas energy across the regions with different discounts for different classes. The only difference between the total gas charges in the different regions stems from the transmission tariffs. We understand that distribution charge is the same irrespective of zone. Transmission tariffs that are charged by Sasol Gas and, where applicable, are passed through as an element of the total charges by other licensees are split into three zones – Zone 1: Secunda-Gauteng-Sasolburg, Zone 2: Witbank-Middelburg and Zone 3: KwaZulu-Natal. The tariff for the different zones is shown in the figure below. As one can see, a large proportion of the total gas charges for the different zones is the same with a small price difference based mainly on the different transmission charges.

**Figure 13: Maximum total gas charges to customers in each transmission zone**
However, an analysis of actual average prices across the different regions shows that there are significant price differences. The table below demonstrates that there are significant differences between the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region. In 2012 and 2013, the overall price was 18.4% and 24.2% lower respectively, in KZN. Price differences for the individual classes of customers ranged between 39.5% lower and 12.8% higher in KZN. For the two periods of 2014, there was a price difference of -22.7% and -13.1% respectively between the Gauteng/Mpumalanga/Free State and KwaZulu-Natal regions. In the April-December period of 2014 there were negligible prices differences for Classes 2 and 3 and -13.7% and -7.5% for Classes 4 and 5 respectively. These observed smaller price differences are likely due to the change in the pricing regime used to set maximum gas energy prices.

97.1. As discussed in section 3.1.1 above, the conclusions that one can draw from the analysis of the actual prices are not definitive, as a new pricing methodology has been implemented, in some cases only partially, and prices do not yet fully reflect the changes required by the new methodology. Further, the previous pricing regime enabled Sasol Gas to price discriminate which may have led to prices being above the competitive level.
Table 11: Sasol Gas’ average prices weighted by volume in the GP/MP/FS and KZN regions, 2012-2014

<table>
<thead>
<tr>
<th>Class</th>
<th>GP/MP/FS</th>
<th>KZN</th>
<th>Difference</th>
<th>GP/MP/FS</th>
<th>KZN</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>R 67.38</td>
<td>R 54.95</td>
<td>-18.4%</td>
<td>R 81.31</td>
<td>R 61.61</td>
<td>-24.2%</td>
</tr>
<tr>
<td>Class 1</td>
<td>R 173.23</td>
<td>R 111.91</td>
<td>-35.4%</td>
<td>R 205.74</td>
<td>R 192.89</td>
<td>12.0%</td>
</tr>
<tr>
<td>Class 2</td>
<td>R 171.00</td>
<td>R 193.68</td>
<td>12.8%</td>
<td>R 216.95</td>
<td>R 156.39</td>
<td>-39.5%</td>
</tr>
<tr>
<td>Class 3</td>
<td>R 135.28</td>
<td>R 156.95</td>
<td>-14.2%</td>
<td>R 94.60</td>
<td>R 66.27</td>
<td>-14.0%</td>
</tr>
<tr>
<td>Class 4</td>
<td>R 89.81</td>
<td>R 103.20</td>
<td>-16.8%</td>
<td>R 82.31</td>
<td>R 60.74</td>
<td></td>
</tr>
<tr>
<td>January 2014 – March 2014</td>
<td>R 81.63</td>
<td>R 63.14</td>
<td>-22.7%</td>
<td>R 74.64</td>
<td>R 64.87</td>
<td>-13.1%</td>
</tr>
<tr>
<td>April 2014 – December 2014</td>
<td>R 217.85</td>
<td>R 174.10</td>
<td>-13.9%</td>
<td>R 126.10</td>
<td>R 126.56</td>
<td>0.4%</td>
</tr>
<tr>
<td>Overall</td>
<td>R 59.28</td>
<td>R 50.85</td>
<td>-14.2%</td>
<td>R 66.27</td>
<td>R 56.99</td>
<td>-14.0%</td>
</tr>
<tr>
<td>Class 6</td>
<td>R 44.91</td>
<td>R 60.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Genesis calculations based on information received from NERSA

Notes: The average prices for 2014 are split into two periods, January – March 2014 and April 2014 – December 2014. Prior to 26 March 2014, Sasol Gas’ end customers were charged prices per site. Following the change in the regulatory dispensation on 26 March 2014, Sasol Gas’ end customers were able to switch to being charged a price based on their combined volumes across their sites. Average prices are thus calculated per site for end customers for 2012, 2013, and the period January 2014 – March 2014, and across sites for end customers for the period April 2014 – December 2014. Traders were consistently charged a price based on their combined volumes across their sites.

98. Exclusive distribution areas only relate to the construction and operation of a distribution network and not trading of gas. Distribution licences provide the licensee with exclusivity in the construction and operation of distribution network services in the geographic area that the network is located. However, this exclusivity is limited in two respects. Firstly, it does not extend to the trading of gas over that network. Although there is no mandatory TPA to the distribution network, another licensee with a trading licence can enter into a voluntary TPA agreement with the infrastructure owner and supply gas to customers on the network. For example, a trading licensee such as Spring Lights Gas supplies gas to customers connected to Sasol’s distribution network. Secondly, the exclusivity also only relates to a specified type of gas. In the case of Sasol Gas, this would be natural gas of a certain specification in its distribution areas in Gauteng and synthetic (methane rich) gas of a certain specification in those distribution areas in KwaZulu-Natal and Mpumalanga. Other traders such as NOVO Energy that supply CNG, which has a different gas specification, will be able to supply customers in Sasol Gas’ distribution area as the exclusivity does not extend to this specification. This suggests that there could be a single market for trading of piped-gas to industrial customers.

100 The Gas Act (No. 48 of 2001), s21(1)(e).
99. As a result of the above analysis, we find that we cannot definitively define the market as national or regional in scope. However, a definition of the geographic scope of the market is required for an assessment of the adequacy of competition. Therefore, we have erred on the side of caution and assessed the adequacy of competition in a national market and in separate markets for the trading of gas to end customers in the Gauteng/Mpumalanga/Free State and KwaZulu-Natal regions.

3.3.3. **Market for the trading of piped-gas to vehicular customers**

100. Gas for use as vehicle fuel is only available in a small area within the Gauteng province as shown in the figure below. There are only two suppliers of CNG for the use of gas as vehicle fuel. Firstly, NOVO Energy with its refueling stations located in Edenvale, Benoni and Germiston shown as the blue identifiers on the map below. All the stations are located in the east of Johannesburg. Secondly, VGN/NGV with its refueling station located in Langlaagte which is 5km South of Johannesburg and shown as the yellow identifier on the map below.

*Figure 14: Novo Energy and Virtual Gas Network refueling stations*

101. The market for the trading of piped-gas to vehicle customers can be defined very narrowly based on customer purchasing behaviour and preferences. This is the approach sometimes used in defining markets for retailing such as grocery shopping and petrol stations,\(^\text{101}\) as grocery stores and petrol stations generally attract customers from within a small catchment area around their location.

102. In the case of CNG for vehicle fuel, if customers only purchase gas from the specific trader that retrofitted the vehicle, then the market can be narrowly defined as a catchment area around that specific refueling station. However, if customers purchase from different refueling stations belonging to different companies then the catchment area can be defined to be larger incorporating the relevant refueling stations that customers purchase from.

103. However, the market for trading of gas to vehicle customers is relatively new and small in comparison to the rest of the piped-gas supply. This makes understanding customer preferences and behaviour difficult as there is insufficient information to draw a conclusion. In particular, the preferences and willingness of customers to travel to purchase CNG has not been sufficiently tested. This makes the exercise of defining the precise scope of the geographic market difficult. Nevertheless, we define the market for the trading of piped-gas to vehicle customers to be as wide as the greater Johannesburg area which includes all refueling stations operated by VGN/NGV and NOVO Energy.

3.4. SUMMARY

104. We will assess whether there is adequate competition in the following relevant markets:

104.1. A market for the trading of piped-gas to traders;

104.2. A national market for the trading of piped-gas to industrial customers or separate markets for the trading of piped-gas to industrial customers in the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal; and

104.3. A market for the trading of piped-gas to vehicular customers in the greater Johannesburg area.
4. **ASSESSMENT OF THE ADEQUACY OF COMPETITION**

105. In this section, we assess the adequacy of competition in the three relevant markets that are the focus of this assessment, namely: (i) the market for the trading of piped-gas to traders; (ii) the market for the trading of piped-gas to industrial customers which could be national or separate markets in the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal region; and (iii) the market for the trading of piped-gas to vehicular customers in the greater Johannesburg area. The assessment is based on the economic framework that was developed for the assessment of the adequacy of competition. The factors that will be considered, where relevant, include:

105.1. Level of concentration including market shares;
105.2. Barriers to entry and evidence of entry;
105.3. Countervailing buyer power;
105.4. Dynamic characteristics of the market including growth and innovation;
105.5. Nature and extent of vertical integration;
105.6. Access to infrastructure: control of essential facilities; and
105.7. Evidence of the competitive conduct of firms.

4.1. **THE MARKET FOR TRADING OF PIPED-GAS TO TRADERS**

106. As discussed, Sasol Gas is the largest supplier of piped-gas to traders, is vertically integrated with access to gas as well as both the transmission and distribution network infrastructure. Although NOVO Energy has access to landfill gas in Edenvale, Johannesburg, it does not supply this to other traders. However, there is a peculiar situation in this market where some traders/resellers that are supplied by Sasol Gas supply gas to other traders as well. Egoli Gas is an example of this, however, Egoli Gas is not a trader in terms of the Gas Act, but a reticulator. It is a reseller in terms of Schedule One to the Agreement concerning the Mozambican Gas Pipeline between the Government of RSA and Sasol Ltd. It has an arrangement with a new entrant – Reatile Gastrade as well as VGN/NGV where it supplies the latter with gas. However, we understand that since the licensing of Reatile Gastrade, VGN/NGV may be supplied by the former with gas supplies procured from Egoli Gas. This effectively creates a second level in the market for trading of gas to traders.

107. However, it must be noted that both Egoli Gas and Reatile Gastrades’ ability to compete against Sasol Gas for trader customers is severely limited as all of its gas supply is procured from Sasol Gas. Egoli Gas is dependent on Sasol Gas in order for it to supply Reatile Gastrade as well as its own customers. Reatile Gastrade is indirectly dependent on Sasol Gas as its supply from Egoli Gas is also sourced from Sasol Gas. Further, the price that VGN/NGV is charges for gas may be significantly higher than the price Sasol Gas charges traders. The price to VGN/NGV may be around [Price] per GJ as this is the price VGN/NGV passes through to its customers in terms of its pricing methodology.
whereas Sasol Gas’ average price to Egoli Gas is and to other traders is lower than this (see Table 7) for the 2014 calendar year. This would mean Egoli Gas/Reatile Gastrade would be unable to compete with the charges offered by Sasol Gas to other traders. Therefore, Egoli Gas (and Reatile Gastrade) is not considered a competitor in this market.

108. Taking this into consideration, Sasol Gas therefore has a 100% market share in the market for the trading of piped-gas to traders and would be regarded as dominant in terms of the Competition Act. In addition, the use of the market value pricing methodology by Sasol Gas allowed it to price discriminate between different categories of customers. Based on this analysis and the thresholds for dominance identified in the Competition Act, we find that Sasol Gas is a dominant firm in the market for the trading of piped-gas to traders as it has a market share greater than 45%. As Sasol Gas is the dominant supplier of piped-gas to traders in South Africa, it does not change whether the market is defined as national or narrowly on the basis of specific regions (such as the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region). Hence, Sasol will be regarded as dominant.

109. Even if Egoli Gas/Reatile Gastrade were to be included as a competitor in this market, this would not make a significant difference to Sasol Gas’ dominance of this market. On this basis, Sasol Gas had a 100% market share in 2012 and 2013, with it reducing to 99% in 2014 when Egoli Gas/Reatile Gastrades’ sales to VGN/NGV are taken into account.

Table 12: Market shares in the market for the trading of piped-gas to traders, 2012-2014

<table>
<thead>
<tr>
<th></th>
<th>Volume (GJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
</tr>
<tr>
<td>Sasol Gas</td>
<td></td>
</tr>
<tr>
<td>Egoli Gas/Reatile Gastrade</td>
<td></td>
</tr>
<tr>
<td>Market share:</td>
<td></td>
</tr>
<tr>
<td>Sasol Gas</td>
<td>100%</td>
</tr>
<tr>
<td>Egoli Gas</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Genesis calculations based on information received from NERSA
Notes: (i) VGN/NGV began trading in 2014 and purchases its gas from Egoli Gas. We are unable to calculate the sales revenues for Egoli Gas as we do not have information on the prices at which Egoli Gas sells its gas to VGN/NGV. Therefore, we only consider the volume sold to individual traders by Sasol Gas and Egoli Gas. (ii) Egoli Gas’ sales in this market would include sales to both Reatile Gas and VGN/NGV (irrespective of whether VGN/NGV is supplied by Egoli Gas or Reatile Gas). We have only included VGN/NGV sales as the measure of Egoli Gas’ sales in the market for trading of piped-gas to traders. Reatile Gastrade’s sales to end customers for the relevant time period would be nil as they are yet to begin trading.

110. The dominant position of Sasol Gas is reinforced by high barriers to entry and little to no countervailing buyer power. This is unlikely to change over the next two years which is when NERSA may review its assessment of the adequacy of competition in the piped-gas markets.

\[102\] Genesis calculation
\[103\] We do not have any information on the total charges for gas supplied by Egoli gas to Reatile Gastrade.
\[104\] The Competition Act (no. 89 of 1998) s7
110.1 Barriers to entry into the market for the trading of gas to traders remain very high as evidenced by the lack of entry of any new independent source of supply into this market, since Sasol first started supplying gas in South Africa. The main hindrance is the lack of availability of new gas supplies which is likely to remain the case in the next few years. Although the South African government has begun efforts to stimulate the gas market by developing a Gas Utilisation Master Plan (“GUMP”), aimed at developing and expanding the penetration of gas in the South African energy mix\textsuperscript{105} and publishing a Request for Information in relation to gas fired power station with a capacity of 3 126MW, the developments proposed in the GUMP and the finalisation of the procurement of the gas-fired power station are unlikely to occur in the short term to result in new entry or increased availability of gas supplies.

110.2 Further, in order to supply traders, a new entrant might need access to Sasol's transmission and/or distribution network. Although, there is mandatory third party access for the transmission network, this does not apply to the distribution network where a voluntary principle applies. Also, mandatory access is only to uncommitted capacity. The 2007 Piped-Gas Regulations\textsuperscript{106} make provisions for third party access to transmission and storage facilities of piped-gas. The elements to be considered when determining uncommitted capacity include the contractual commitments of the licensee, the variations in capacity from line to line, and the load profile. Since Sasol Gas is also vertically integrated, it may have a strong incentive to indicate that there is very little uncommitted capacity on the transmission network. Although, Sasol Gas is subject to regulation by NERSA in respect of this, there is the potential for it to use the asymmetry of information between itself and the regulator regarding capacity on the transmission network to its advantage.

110.3 As there are no effective alternative suppliers for traders, they have little to no countervailing buyer power to counter Sasol Gas' market power. They are wholly reliant on Sasol Gas for their gas supply. Although, NOVO Energy does have an alternative source of gas, this only supplies a small proportion of its total requirement and it is still reliant on Sasol Gas for the remaining supply.\textsuperscript{107}

110.4 As evidence of Sasol Gas’ market position, it was issued with a notice of non-compliance with regard to clause 9 of Schedule One of the Agreement where it was found that it had charged Spring Lights Gas and NOVO Energy a gas energy price above the maximum gas price for resellers as applicable at the time.\textsuperscript{108}

\textsuperscript{105} The first draft of the GUMP is yet to be published. It is being developed by the IPP office of the Department of Energy.
\textsuperscript{106} Piped-Gas Regulation, April 2007 (GG No 29792 of 20 April 2007).
\textsuperscript{107} An analysis of NOVO Energy’s sales of gas and its purchases from Sasol Gas shows the following: In 2013, Novo Energy purchased 21 507 GJ from Sasol Gas. Novo Energy’s total sales for 2013 amounted to 21 057 GJ, implying that Novo Energy acquired the difference of 1 036 GJ from other sources such as its landfill site. Thus, 95.3% of Novo Energy’s total sales were purchased from Sasol Gas in 2013, with only 4.7% procured from alternative sources. However, in 2014, it sold 51 458 GJ whereas its total sales were 53 549 GJ, meaning its purchases from Sasol where greater than its total sales.
\textsuperscript{108} Clause 9 refers to prices to resellers under the old dispensation, not to maximum prices as per the new dispensation.

110.4.1. Sasol Gas charged Spring Lights Gas a price above the maximum price between R 0.12/GJ and R 4.23/GJ during 1 March and December 2013. Sasol Gas had to reimburse Spring Lights Gas for the overcharge; and

110.4.2. NOVO Energy was also charged a price above the maximum price during March 2013 and February 2014. The overcharge ranged from R 15.91/GJ to R 23.51/GJ and Sasol Gas had to reimburse NOVO Energy for the amount overcharged.

111. Based on the above analysis, our assessment is that there is inadequate competition in the market for the trading of piped-gas to traders. The assessment remains the same irrespective of whether the geographic scope of the market is defined as national or separated into the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal region.

4.2. THE MARKET FOR THE TRADING OF PIPED-GAS TO END CUSTOMERS

112. We have defined three separate markets for the trading of piped-gas based on the customer categories viz. industrial customers, vehicle customers and residential customer. The market for residential customers is at present exclusively serviced by reticulators, which are not regulated by NERSA and does not fall within the scope of NERSA’s mandate and therefore is not assessed further.

4.2.1. Industrial customers

113. The geographic scope of the market for the trading of piped-gas to industrial customers is considered to be either national or split into two regions – the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region. We assess the adequacy of competition in each of these markets.

Concentration levels and market shares

114. One of the most important indicators of the adequacy of competition in any market is the level of concentration and market shares. It provides an indication of the level of market power of the firms’ active in that market. The higher the concentration level and level of individual firm’s market shares, the lower the level of competition in the market.

115. We have estimated the market shares for the licensees active in the market for industrial customers on the basis of both revenue and volume of sales for the 2012 to 2014 calendar years. The results of the analysis are shown in the tables below. Irrespective of whether the market is defined as national or separate markets for the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal region, both the level of concentration and Sasol Gas’ (and Spring Lights Gas’) market share are high indicating that the level of competition is low across all markets.

115.1. National. Based on revenue from piped-gas sales, Sasol Gas’ market share is above 80% between 2012 and 2014 making it the dominant supplier to industrial customers. This is based on the Competition Act defining the level of presumed dominance at a market share of 45%.109 Spring Lights Gas is the second largest

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109 Section 7 of the Competition Act No 89 of 1998, as amended
trader with between 15% and 30% market share in 2014 which has grown by 3.5% point between 2012 and 2014. NOVO Energy and VGN/NGV remain very small traders in the market with VGN/NGV only accounting for 1% to 5% of the market in 2014 with no sales in the other years. NOVO Energy's market share on the other hand is less than 5% of the market in 2013 and 2014, having no sales in 2012. These findings also hold when market shares are calculated on the basis of the volume of sales, in which case Sasol Gas still has a market share above 80% although Spring Light Gas' market share is lower, in the range 10% to 20%.

115.2. The 2 firm concentration ratio shows that the top 2 firms in the market together hold almost 100% of the market. The level of the HHI is calculated to be above 7000 for all the years analysed. On the basis of the HHI thresholds defined by the Department of Justice ("DoJ") the market can be considered to be highly concentrated.\textsuperscript{110}

115.3. Gauteng/Mpumalanga/Free State. Similar albeit stronger conclusions can be reached for the Gauteng/Mpumalanga/Free State region. Sasol Gas has a market share of almost 100% whether the market share is calculated based on revenue or volumes of sales. On this basis and the thresholds for dominance defined in the Competition Act, Sasol Gas would be regarded as dominant. NOVO Energy and VGN/NGV are the only other competitors for industrial customers in this region and their revenue market shares for 2014 are between 1% and 5% respectively. Therefore, these licensees cannot be regarded as significant competitors to Sasol Gas in this region.

115.4. As expected, the 2 firm concentration ratio is very high at 99.9% in 2014 and HHI levels are also considerably high at 9879 for 2014, which based on the thresholds defined by the DoJ, the market would be regarded as highly concentrated.

115.5. KwaZulu-Natal. The context in this region is slightly different to that at the national level and in the Gauteng/Mpumalanga/Free State region. Sasol Gas and Spring Lights Gas are the only two traders in this region and both have significant market shares at or above 45% depending on whether the market share is calculated using revenue or volumes. In 2014, Sasol Gas is estimated to have a market share of between 40% and 50% based on revenue and between 55% and 60% based on volume where Spring Lights Gas has a market share of between 50% and 60% based on revenue and between 40% and 45% based of volume. This suggests that Spring Lights Gas, whilst selling a lower volume of gas, sells the gas at a higher price and to a larger number of customers in lower volume categories compared to Sasol Gas.

115.6. However, both Sasol Gas and Spring Lights Gas can be considered as being dominant on the basis of the estimated market shares and the thresholds for dominance specified in the Competition Act. As a result, the 2 firm concentration ratio and level of HHI is also high indicating that the market is highly concentrated.

\textsuperscript{110} The DoJ has established thresholds for classifying markets according to their HHI: (i) Unconcentrated markets: HHI below 1500; (ii) Moderately concentrated markets: HHI between 1500 and 2500; (ii) Highly concentrated markets: HHI above 2500.
### Table 13: Revenue market shares in the market for the trading of piped-gas to industrial customers in the national, GP/MP/FS and KZN regions, 2012-2014

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<tbody>
<tr>
<td>Sasol Gas</td>
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<tr>
<td>Spring Lights Gas</td>
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<tr>
<td>Novo Energy</td>
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<tr>
<td>VGN/NGV</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>HHI</td>
<td>7637</td>
<td>7394</td>
<td>7083</td>
<td>10000</td>
<td>9990</td>
<td>9879</td>
<td>5052</td>
<td>5051</td>
<td>5050</td>
</tr>
<tr>
<td>Concentration ratio (2 firm)</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.6%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.9%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Source:** Genesis calculations based on information received from NERSA

**Notes:** (i) Novo Energy started trading in 2013, whereas VGN/NGV started trading in 2014; (ii) Reatile Gastrade has not started trading yet, and is therefore not included in the market share calculations.

### Table 14: Volume market shares in the market for the trading of piped-gas to industrial customers in the national, GP/MP/FS and KZN regions, 2012-2014

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<tbody>
<tr>
<td>Sasol Gas</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Spring Lights Gas</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Novo Energy</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>VGN/NGV</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>HHI</td>
<td>8268</td>
<td>7993</td>
<td>7928</td>
<td>10000</td>
<td>9993</td>
<td>9943</td>
<td>5172</td>
<td>5181</td>
<td>5202</td>
</tr>
<tr>
<td>Concentration ratio (2 firm)</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.8%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.9%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Source:** Genesis calculations based on information received from NERSA

**Notes:** (i) Novo Energy started trading in 2013, whereas VGN/NGV started trading in 2014; (ii) Reatile Gastrade has not started trading yet, and is therefore not included in the market share calculations.
Barriers to entry and experience of entry

116. Barriers to entry into the South African gas market are significantly high. There are a number of key factors hindering the growth and development of new entrants into the market.

116.1. **Access to gas supply.** There are currently only two sources of gas supply into the South African market, both of which are supplied via Sasol Gas. Natural gas is imported from Mozambique via the ROMPCO pipeline\(^{111}\) and synthetic gas is manufactured by Sasol at its plant in Secunda. The imported natural gas supply is limited and Sasol Gas is obligated in terms of the agreement to supply a minimum volume of gas per annum into the South African market for the next 15 years, thereby reducing the volume that can be sold in the short to medium term to secure the longer term supply. This limitation combined with Sasol’s use of a significant volume of gas for its own operations; as well as its presence at the downstream level (i.e. trading of gas), provides Sasol with little to no incentive to increase the volume of gas supplied to other traders or customers. It is also important to note that the two most recent entrants into the market – VGN/NGV and Reatile Gas – are not procuring their gas supplies from Sasol Gas but from Egoli Gas. This indicates that it may be more difficult for traders to procure gas from Sasol Gas. New sources of supply are unlikely to arise in the short term. As discussed, although the South African government is aiming to stimulate the growth of the gas industry by developing a GUMP and issuing a RFI for gas fired power generation, this is unlikely to have any impact on the availability of gas in the short term.

116.2. **Legal and regulatory barriers.** New entrants into the gas market would also need to obtain the required licences from NERSA and have their tariffs and maximum gas prices approved by NERSA in order to enter the market. Although, this does not appear to be a significant barrier as a number of new entrants have been licensed over the last few years including NOVO Energy, VGN/NGV and most recently Reatile Gas, this clearly imposes a cost on new entrants and, by definition, poses a barrier to entry.

116.3. **Access to infrastructure.** Another impediment for entrants to enter and grow in the market is access to infrastructure. There is no mandatory third party access to the distribution network which makes it difficult for new entrants to supply existing gas customers. The mandatory TPA to transmission pipelines requires the existence of uncommitted capacity, which creates a greater barrier than a common carrier regime for instance. This is discussed in greater detail in the section on access to network infrastructure.

117. The impact of the high barriers to entry is demonstrated in the evidence of actual entry into the market. Since Sasol first started supplying natural gas into the South African market in 2004, there have only been a few entrants such as NOVO Energy and VGN/NGV who have not been able to grow significantly in the market. Spring Lights Gas is a special case as it benefitted from being partially owned by Sasol with a special dispensation from Sasol to use its distribution network in KwaZulu-Natal and supply gas to customers using Sasol’s network. Even though it is no longer partially owned by Sasol, it still benefits from being able to use Sasol’s distribution network to supply customers.

\(^{111}\) We do not consider the gas extracted by PetroSA to be part of this market as it is for its own use and is not supplied to traders or customers.
Reatile Gas is a new entrant that was only recently licensed and intends to supply gas in Gauteng. The evidence of entry therefore demonstrates that it is difficult for new entrants to enter and grow in the market irrespective of whether the market is national or separated into the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region.

Countervailing buyer power

118. Countervailing buyer power relates to the ability of customers to competitively constrain dominant firms by threatening to purchase from alternative suppliers, sponsor entry, or vertically integrate into upstream production.\textsuperscript{112}

118.1. Customer concentration. An assessment of customer concentration is a useful indicator of the level of countervailing buyer power. It is the percentage of sales accounted for by the largest customer or group of customers. It is important to consider the customer concentration in absolute terms as well as relative to supplier concentration. We have analysed the top 5 customer concentration for Sasol Gas nationally and in the different regions as well as for Spring Lights Gas.\textsuperscript{113}

118.1.1. Nationally, Sasol Gas’ top 5 customers account for only 33.4% of total sales by volume and revenue respectively. There are a further 66.6% customers that account for the remaining sales. Similar results are observed for the Gauteng/Mpumalanga/Free State region.

118.1.2. However, in the KwaZulu-Natal region, the top 5 customers of both Sasol Gas and Spring Lights Gas account for over 80.6% by volume and revenue. This may suggest that customers in this region may be in a better position relative to customers in the Gauteng/Mpumalanga/Free State region. This analysis however must be considered in light of other aspects that impact countervailing buyer power such as the availability of alternative suppliers which will be considered next.

| Table 15: Sasol Gas’ volume and revenue that is accounted for by its top five and remaining customers in the national, GP/MP/FS and KZN regions, 2014 |
|-------------------------------------------------|-----------------|-----------------|-----------------|
| | National | GP/MP/FS | KZN |
| | Volume (GJ) | Share | Volume (GJ) | Share | Volume (GJ) | Share |
| Top 5 customers | | 33.4% | | 39.7% | | 80.6% |
| Remaining customers | | 66.6% | | 60.3% | | 19.4% |
| | Revenue (R) | Share | Revenue (R) | Share | Revenue (R) | Share |
| Top 5 customers | | 32.0% | | 38.2% | | 77.4% |
| Remaining customers | | 68.0% | | 61.8% | | 22.6% |


\textsuperscript{113} An analysis of NOVO Energy and VGN/NGV’s customers would be a useful exercise as they only have a few industrial customers. Further, as they have a very small share of the market, the impact of any potential countervailing buyer power by their customers would not have a significant impact on the level of competition in the market.
Table 16: Spring Lights Gas’ volume and revenue that is accounted for by its top five and remaining customers in the national/KZN region, 2014

<table>
<thead>
<tr>
<th>National/KZN</th>
<th>Volume (GJ)</th>
<th>Share</th>
</tr>
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<tbody>
<tr>
<td>Top 5 customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remaining customers</td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>Revenue (R)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 5 customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remaining customers</td>
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</tbody>
</table>

118.2. **Alternative suppliers.** Industrial customers do not have any or very limited countervailing buyer power as there are no alternative piped-gas suppliers for them to switch to. This is particularly the case as there are no third party access arrangements for Sasol Gas’ distribution network allowing other traders to supply gas over that network. Therefore, there are effectively no alternative suppliers for customers on Sasol Gas’ distribution network when looking at a national market or the Gauteng/Mpumalanga/Free State region. The only exception is possibly the KwaZulu-Natal region where Spring Lights Gas is able to supply customers on Sasol Gas’ distribution network. However, the ability of Spring Lights Gas to pose an effective alternative for customers is limited for the following reasons:

118.2.1. Firstly, it is reliant on Sasol Gas for both its supply of piped-gas and the use of its distribution network. There are also no alternative suppliers that Spring Lights Gas can switch to. This means that it has very little to no countervailing buyer power in the market for the trading of gas to traders.

118.2.2. Secondly, its total charges for gas limit its ability to compete against Sasol. A proportion of its total charges to customers are outside its control. It passes through the tariffs for transmission and distribution that Sasol Gas charges it. The gas energy price it charges is based on the energy price indicators which is the same approach used by Sasol Gas.114 Moreover,

114 NERSA (2015) Reason for decision in the application for approval of piped-gas maximum prices by Spring Lights Gas, para. 5.1-5.7
its trading margin is R 32.28 which is 3 times higher than Sasol Gas’ margin of R 10.41.\(^{115}\)

118.2.3. Finally, the previous relationship between Sasol Gas as part owner of Spring Lights Gas and the consent order between the Competition Commission and Spring Lights Gas regarding agreements between the two companies to allocate customers and territories also brings into question the extent of competition between them. This is discussed in more detail in the section on evidence of the competitive conduct of firms in the market.

119. It is for these reasons that we find there is no or very limited countervailing buyer power in the national market for the trading of gas to industrial customers or in the Gauteng/Mpumalanga/Free State and KwaZulu-Natal regions.

Dynamic characteristics of the market

120. The dynamic characteristics of the market relate to the changes that occur in a market over time such as growth and innovation. These are important aspects to take into consideration as it may impact the assessment of the extent of competition in the relevant market/s. The more dynamic a market is, the more difficult it may be to assess the extent of competition at a particular point in time or to predict what will happen in future.\(^{116}\)

121. Entrants into the market such as NOVO Energy and VGN/NGV have introduced new ways of consuming gas in the South African market. Both licensees compress natural gas and supply this as fuel for use in vehicles. VGN/NGV also supplies compressed natural gas in MAT modules for use by companies that are not on the gas distribution network. The latter is more relevant to industrial customers. However, the impact of this innovation on the market has been fairly minimal. VGN/NGV has only been able to gain a less than 1% share of the market since entering the market.

122. The South African gas industry may undergo significant changes in future that could stimulate gas sales leading to greater growth, entry and innovation. As discussed, the Department of Energy through the IPP Office is preparing the GUMP which will establish the national plan for greater use of gas in the South African energy mix. In addition, the South African government has also released the RFI for the procurement of 3 126 MW of gas fired generation capacity.\(^{117}\) These and other developments such as the potential for the exploration and production of shale gas in the Karoo region of South Africa and discoveries of significant gas reserves in neighbouring countries such as Mozambique could fundamentally change the gas sector in South Africa. However, these developments, if they actually occur, will only likely have an impact in the medium to long term and do not impact on the current assessment of the adequacy of competition.

Extent of vertical integration

123. Sasol Ltd is the vertically integrated incumbent licensee and is active at all levels of the supply chain. Its wholly owned subsidiary Sasol Petroleum International brings in the gas from the Pande and Temane fields in Mozambique via the ROMPCO pipeline, its wholly

\(^{115}\) This is the trading margin to end customers for 1 July 2014 to 30 June 2015.


\(^{117}\) Gas to Power Programme website available at: https://www.ipp-gas.co.za/Home/About
owned subsidiary Sasol Synfuels produces synthetic gas and lastly, its wholly owned subsidiary Sasol Gas owns and operates the transmission and distribution networks in South Africa (save for a single transmission pipeline) and it supplies gas to traders whom it competes against in the market for the trading of gas to industrial customers. This impacts on the extent of competition in the following ways:

123.1. Firstly, vertically integrated firms experience lower incentives to treat their downstream competitors fairly and may engage in conduct aimed at foreclosing competitors’ access to inputs or customers. These incentives are no different for Sasol Gas which is a vertically integrated dominant firm. As discussed earlier, the potential for this type of conduct is evidenced by Sasol Gas’ conduct with regard to its compliance with clause 9 of Schedule One of the Agreement. NERSA found that it had charged Spring Lights Gas and NOVO Energy a gas energy price above the maximum gas price and had to reimburse the traders for the overcharge.\textsuperscript{118}

123.2. Secondly, as Sasol Gas is the dominant vertically integrated firm and there are no alternative suppliers to Sasol Gas, traders are limited in their ability compete against Sasol Gas. They are effectively captive customers as they cannot legitimately threaten Sasol Gas with switching to an alternative supplier as there are no alternatives.

124. The impact of the level of vertical integration is the same irrespective of whether the market is national or separated into the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal. All licensees are either directly or indirectly reliant on Sasol Gas for their supply of gas. Spring Lights Gas is even more dependent on Sasol Gas as it uses Sasol Gas’ distribution network to supply gas to customers on the network. This severely limits Sasol Gas’ competitors to compete against it in the market irrespective of how the geographic scope is defined.

Access to network infrastructure

125. To compete effectively against Sasol Gas to supply its industrial customers, competitors would require access to Sasol Gas’ transmission and distribution networks (as well as an alternative supply of gas which was discussed earlier). Although there is mandatory third party access for the transmission network, this does not relate to the distribution network where a voluntary principle applies. Therefore, unlike transmission pipelines where there is a regulatory framework and guidelines for such agreements, there are no such provisions for gaining access to the distribution network. To date, no entrant has concluded an agreement with Sasol Gas for access to the distribution network. This lack of access is not necessarily a result of Sasol Gas’s behaviour or the absence of mandatory third party access. It may be the case that no new entrants have attempted to gain access to the distribution network. The overriding constraint to new entry in the South African gas industry is the lack of access to gas supplies.

126. Spring Lights Gas is the only exception to this lack of access. However, the reason why it is allowed to use Sasol Gas’ distribution network in KwaZulu-Natal is likely to be attributed to Sasol Gas’ historical ownership of 49% of Spring Lights Gas which formed part of an early Sasol black economic empowerment initiative. The remaining 51% was owned by

\textsuperscript{118} NERSA, Reason for Decision – Assessment of Sasol Gas compliance with Clause 9 of Schedule One of the Agreement, section 6 and 7.
CEPR, a broad based black economic empowerment consortium. Sasol Gas divested of its interest in Spring Lights Gas in the 2013/2014 financial year. Therefore, Spring Lights Gas’ ability to use Sasol Gas’ distribution network is a result of this historical relationship and not an example of a voluntary agreement between a vertically integrated firm and its non-integrated downstream competitor. Therefore, access to the distribution network remains a constraint on traders’ ability to compete in the market for trading of piped-gas to industrial customers.

Evidence of the competitive conduct of firms in the market

127. An additional factor to take into consideration is evidence of the competitive conduct of firms. Specifically, whether there has been a history or any evidence of anti-competitive behaviour such as that described in Chapter 2 of the Competition Act. This would provide a useful indication of the tendency toward anti-competitive behaviour in a particular market, and could be particularly relevant in a market with high levels of concentration.

128. There have been two consent agreements concluded by the Competition Commission and confirmed by the Competition Tribunal which are of relevance to this assessment. The first is with Egoli Gas and was concluded in March 2013 and the other with Spring Lights Gas which was concluded in April 2013. Both of these agreements relate to the relationship and market sharing agreements between these individual parties and Sasol Gas. The findings of these consent agreements demonstrate that Sasol Gas has had anti-competitive agreements with other gas companies.

129. Following a corporate leniency application by Sasol Gas in 2009, the Commission initiated investigations concerning the relationship between Egoli Gas and Sasol Gas and between Spring Lights Gas and Sasol Gas. Sasol Gas’ leniency application related to its participation in agreements which contravened section 4(1)(b)(ii) of the Competition Act which prohibits an agreement or concerted practice between firms in a horizontal relationship if it divides markets by allocating customers, suppliers, territories or specific types of goods/services. The findings of the Commission’s investigation in both cases was that the agreements contravened section 4(1)(b)(ii) by allocating customers and/or territories. Egoli Gas and Spring Lights Gas were issued fines of R 1.6 million and R 10.8 million respectively.

130. In addition, the pricing regime contained in the Special Regulatory Dispensation Period as defined in Schedule One to the Agreement, allowed Sasol Gas to price discriminate between similar customers. A new pricing regime aimed at eliminating this discrimination has since been implemented. As discussed earlier, the price changes required in terms of the new regime have not yet been fully implemented. Although this is not evidence of anti-competitive conduct, it does indicate that there was price discrimination in the market, the

119 Competition Tribunal, Competition Commission and Spring Lights Gas (Pty.) Ltd., Case no. 011569, 11 April 2013, par. 2.1
120 Competition Tribunal, Competition Commission and Egoli Gas (Pty.) Ltd., Case no. 016402, 28 March 2013; Competition Tribunal, Competition Commission and Spring Lights Gas (Pty.) Ltd., Case no. 011569, 11 April 2013
Note that the Commission’s finding with respect to the relationship and agreement between Sasol Gas and Egoli Gas does not indicate that the two firms are competitors and Egoli Gas should be included in the market. It is important to note that Egoli Gas does not possess any licence issued by NERSA (including a trading licence). This means that Egoli Gas cannot sell gas to any customer via Sasol Gas’s network and therefore it cannot impose a competition constraint on Sasol Gas or other licensee. As noted in the order, the regulatory framework and the relevant by-laws do not prevent Egoli Gas from supplying piped-gas in competition with Sasol Gas provided it obtains the necessary regulatory approval. (par. 4.3.1 of the Egoli consent order) Therefore, we have not considered Egoli Gas as part of the trading market. Egoli Gas is likely to be significant supplier in the residential market. However as none of the NERSA licensees supply into that market, we have not considered the adequacy of competition in that market.
prohibition of which is associated with a firm holding market power in terms of the Competition Act.\textsuperscript{121} NERSA will need to continue to monitor prices to ensure that this process is completed and there is no longer undue price discrimination in the market.

Conclusion

131. Based on the above analysis, our assessment is that there is \textit{inadequate competition in the market for the trading of piped-gas to industrial customers}. The assessment remains the same irrespective of whether the geographic scope of the market is defined as national or separated into the Gauteng/Mpumalanga/Free State region and KwaZulu-Natal.

4.2.2. Vehicular customers

132. The geographic market for the trading of piped-gas to vehicular customers is defined to be as wide as the greater Johannesburg area. This geographic market definition encompasses VGN/NGV and NOVO Energy’s refueling stations. The adequacy of competition in this market is evaluated in the sections below.

Concentration levels and market shares

133. Concentration levels and market shares are key indicators in assessing the adequacy of competition in a market. Markets characterised by high concentration levels and firms with large individual market shares tend to be less competitive compared to markets with lower concentration levels and smaller individual firms.

134. The tables below illustrate the volume and revenue market shares of licensees in the market for the trading of piped-gas to vehicular customers from 2013 to 2014. The large individual market shares of the two licensees active in the market and the high level of concentration indicate that there is a low level of competition in the vehicular market.

134.1. In 2013, NOVO Energy was the sole licensee servicing vehicular customers and thus held a dominant 100% of the market on the basis of both revenue and volume. VGN/NGV entered the market in 2014 and acquired over 60% market share in terms of revenue and volume. VGN/NGV is therefore considered dominant under the thresholds of dominance defined by the Competition Act. NOVO Energy’s market share of 40% in revenue and 35% in volume in 2014 implies that it should also be considered dominant under the thresholds defined in the Competition Act, unless it can demonstrate that it does not hold market power.

134.2. The 2-firm concentration ratio and HHI results further indicate that traders in the trading of piped-gas to the vehicular customer market face a low level of competition. The 2-firm concentration ratio is consistently 100% as NOVO Energy and VGN/NGV are the only traders in the greater Johannesburg area market for the trading of gas to vehicular customers. The volume and revenue HHIs are 10 000 and over 5 000 for 2013 and 2014 respectively. The market can thus be considered highly concentrated under the HHI thresholds established by the DoJ.

\textsuperscript{121} Competition Act 89 of 1998 s9
Table 17: Revenue market shares in the market for the trading of piped-gas to vehicular customers, 2013-2014

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>Novo Energy</td>
<td>100.00%</td>
<td>39.96%</td>
</tr>
<tr>
<td>VGN/NGV</td>
<td></td>
<td>60.04%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>HHI</td>
<td>10 000</td>
<td>5 202</td>
</tr>
<tr>
<td>Concentration ratio (2 firm)</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Genesis calculations based on information received from NERSA

Notes: (i) Novo Energy started trading in 2013, whereas VGN/NGV started trading in 2014; (ii) Reatile Gastrade has not started trading yet and is therefore not included in the market share calculations.

Table 18: Volume market shares in the market for the trading of piped-gas to vehicular customers, 2013-2014

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>Novo Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Gas Network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>HHI</td>
<td>10 000</td>
<td>5 433</td>
</tr>
<tr>
<td>Concentration ratio (2 firm)</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Genesis calculations based on information received from NERSA.

Notes: (i) Novo Energy started trading in 2013, whereas VGN/NGV started trading in 2014; (ii) Reatile Gastrade has not started trading yet and is therefore not included in the market share calculations.

135. If the market was defined more narrowly on the basis of a catchment area around the different licensees refuelling stations, it would be found that both NOVO Energy and VGN/NGV would have a 100% market share in their respective geographic areas. This would therefore strengthen the conclusion regarding concentration levels and market shares.

Barriers to entry and expansion

136. The barriers to entry and expansion in the market for trading of (compressed) piped-gas to vehicular customers are very high. The following features of the vehicular piped-gas market restrict the ability of firms to enter and expand in the market.

136.1. **Access to gas supply.** As discussed above, the supply of gas into the South African market is significantly limited. Sasol Gas is the single importer of piped-gas into South Africa, through the ROMPCO pipeline from the Mozambique gas fields. Sasol is not incentivised to expand the amount of gas available to traders in South Africa as it is contracted to supply a minimum volume of gas for the next 15 years and designates a large proportion of this restricted gas supply for its own internal customers. Licensees in the market for trading of piped-gas to vehicular customers thus face difficulties expanding due to their limited access to gas supplies. Indeed,
VGN/NGV has resorted to acquiring gas from Egoli Gas, suggesting that it has been unable to purchase the gas it requires directly from Sasol Gas.

136.2. **Capital cost requirements.** Entry and expansion in the market for the trading of (compressed) piped-gas to vehicular customers necessitates significant capital outlay relative to the volumes of gas available. The construction of service stations and purchase of the assets required to compress gas represent considerable capital cost requirements that new entrants face. These capital costs to entry are likely to deter firms from entering the market for the trading of piped-gas to vehicular customers, particularly considering that securing a sufficient supply of gas may be difficult.

**Countervailing buyer power**

137. Vehicular customers have limited countervailing buyer power. This restricts their ability to counteract the dominant positions of the two licensees in the market, and hence contributes to the low level of competition in the market. The lack of significant countervailing buyer power is a result of high switching costs and the small size of customers in the market.

137.1. **Switching costs.** Vehicular customers face high costs to switching between traders. Once their vehicles have been converted to operate on gas, customers are effectively captive to a trader. Customers will have to obtain CNG from either VGN/NGV or NOVO Energy. Even where the customers’ vehicles are able to utilise petrol or diesel as well as CNG (‘dual fuel’), customers may still be disinclined to switch back to using diesel or petrol only since they have invested in converting their vehicle. Customers that have compression equipment installed by the supplier at their premises for the purpose of supplying their vehicle fleets are also effectively captured by their supplier. Such customers will have little incentive to switch suppliers as they will endeavour to ensure they recoup the full cost savings from installing the supplier’s equipment.

137.2. **Customer size.** Vehicular customers tend to be small individual consumers. Due to their limited size and gas requirements, such customers do not hold significant countervailing buyer power over licensees in the market for trading of piped-gas to vehicular customers.

138. Vehicular customers thus hold negligible countervailing buyer power over traders in the market for trading of piped-gas to vehicular customers, due to the high costs of switching between traders and the small customer size of many vehicular customers.

**Additional factors**

139. There is no evidence that the firms in the vehicular market have engaged in anti-competitive conduct. Vertical integration is not an issue as VGN/NGV and NOVO Energy are not significantly integrated across levels of the supply chain. Competition is also not overly restricted by limited access to network infrastructure in the market for trading of piped-gas to vehicular customers. However, the high levels of concentration, large market shares, significant barriers to entry and expansion, and the negligible countervailing buyer power of vehicular customers is sufficient to suggest the market is characterised by a low level of competition.
140. It is also important to note that that the market for trading of gas to vehicle customers is relatively new and small in comparison to the rest of the piped-gas industry. It is difficult at this stage to determine how the market will develop and how customers and traders in the market will respond to these developments. Therefore, it is important for NERSA to continue to monitor prices in this market.

**Conclusion**

141. We conclude on the basis of the analysis conducted above that there is inadequate competition in the market for the trading of piped-gas to vehicular customers.

**4.3. SUMMARY**

142. Based on the analysis of various indicators for the level of competition, we find that there is inadequate competition in the three markets assessed. The table below summarises the reasons for our findings.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Market for the trading of piped-gas to traders</th>
<th>Market for the trading of piped-gas to industrial customers</th>
<th>Market for the trading of piped-gas to vehicular customers in the greater Johannesburg area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National</td>
<td>GP/MP/FS region</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>Level of concentration including market shares</td>
<td>Sasol Gas – dominant supplier with 99% market share; Egoli Gas – 1% market share</td>
<td>Sasol Gas’ market share is above 80% - dominant supplier to industrial customers. Spring Lights Gas with only a 17.2% market share</td>
<td>Sasol Gas market share of almost 100%; NOVO Energy and VGN/NGV with less than 0.5% combined</td>
</tr>
<tr>
<td></td>
<td>HHI above 2500 – market considered to be highly concentrated</td>
<td>HHI above 2500 – market considered to be highly concentrated</td>
<td>HHI above 2500 – market considered to be highly concentrated</td>
</tr>
<tr>
<td>Barriers to entry and entry</td>
<td>High; No new entry by independent supply source</td>
<td>High; Recent new entrants but have not gained much market share; Barriers are access to gas and infrastructure and legal and regulatory barriers</td>
<td>High; Recent new entrants but have not gained much market share; Barriers are access to gas and infrastructure and legal and regulatory barriers</td>
</tr>
<tr>
<td>Countervailing buyer power</td>
<td>Little to none; Customers have no effective</td>
<td>Little to none; Customers have no effective</td>
<td>Little to none; Customers have no effective</td>
</tr>
<tr>
<td>Factor</td>
<td>Market for the trading of piped-gas to traders</td>
<td>Market for the trading of piped-gas to industrial customers</td>
<td>Market for the trading of piped-gas to vehicular customers in the greater Johannesburg area</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>GP/MP/FS region</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>Dynamic characteristics of the market including growth and innovation</td>
<td>n/a</td>
<td>Likely developments in future, however unlikely to have an impact in the short term.</td>
<td>n/a</td>
</tr>
<tr>
<td>Nature and extent of vertical integration</td>
<td>Sasol Gas vertically integrated supplier</td>
<td>Sasol Gas vertically integrated supplier</td>
<td>n/a</td>
</tr>
<tr>
<td>Access to infrastructure: control of essential facilities</td>
<td>No entrant has entered into an agreement for access to Sasol Gas’ distribution network. Spring Lights Gas is the exception. However its access was due to a previous shareholding relationship with Sasol Gas.</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Evidence of the competitive conduct of firms</td>
<td>Yes; Sasol Gas charged higher than the maximum approved price to traders</td>
<td>Yes, Sasol Gas had anti-competitive agreements with Spring Lights Gas and Egoli Gas that contravened section 4(1) (b) (ii).</td>
<td>n/a</td>
</tr>
</tbody>
</table>
5. CONCLUSION

143. This report provides an assessment of whether there is currently inadequate competition in the relevant piped-gas markets, as required for the proper administration of the Gas Act. Once the relevant markets have been defined, the assessment involves a consideration of factors such as the level of concentration including market shares, barriers to entry and evidence of entry, countervailing buying power, the dynamic characteristics of the market including growth and innovation, the nature and extent of vertical integration, access to infrastructure – in particular, the control of an essential facility, and lastly, the evidence available relating to the competitive conduct of the firm.

144. The relevant product markets for which geographic markets have been defined includes a market for the trading of piped-gas to traders; a market for the trading of piped-gas to industrial customers; and a market for the trading of piped-gas to vehicular customers. The markets for the transmission and distribution of piped-gas, as well as the market for the trading of piped-gas to residential customers have not been included since NERSA is not mandated to regulate prices for transmission and distribution services predicated on a finding of inadequate competition, and residential customers are primarily supplied by reticulators which do not fall within the scope of NERSA’s mandate.

145. Therefore, the following relevant markets have been considered for the assessment of competition in the piped-gas industry: (i) a market for the trading of piped-gas to traders; (ii) a national market for the trading of piped-gas to industrial customers or separate markets for the trading of piped-gas to industrial customers in the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region; and (iii) a market for the trading of piped-gas to vehicular customers in the greater Johannesburg area.

146. An analysis of the various indicators regarding the level of competition has resulted in a finding of inadequate competition for the three relevant markets under consideration. This finding holds for the market for the trading of piped-gas to industrial customers irrespective of whether the geographic scope of the market is defined as national or considered separately as the Gauteng/Mpumalanga/Free State region and the KwaZulu-Natal region.

147. These findings, where relevant, can be attributed to the high level of concentration and the presence of high barriers to entry, and where there has been entry into these markets the entrants have not been able to gain much market share. In addition, there is little to no countervailing buying power. Although there are potential developments in the market for the trading of piped-gas to industrial customers, they are unlikely to have an impact in the short term. Sasol Gas is also a vertically integrated supplier in the market for the trading of piped-gas to traders and industrial customers. With the exception of Spring Lights Gas, entrants into the market for the trading of piped-gas to industrial customers have not been able to enter into agreements with Sasol Gas for access to its distribution network. Lastly, we have found anti-competitive conduct in the market for the trading of piped-gas to traders and industrial customers.

148. This finding of inadequate competition therefore requires NERSA to approve maximum prices in the piped-gas industry in terms of section 21(1) (p) of the Gas Act.
APPENDIX 1: GAS PRICE CALCULATIONS

149. The gas price is calculated according to NERSA’s Methodology to Approve Maximum Prices of Piped-Gas in South Africa\(^{122}\) ("Methodology"). Given that there is no exchange for piped-gas in South Africa, the price is calculated using the weighted average of the following alternatives to gas: thermal coal, heavy fuel oil ("HFO"), electricity, liquefied petroleum gas ("LPG") and diesel. The resulting price is a Rand per gigajoule value based on the Rand per gigajoule prices of the alternative energy sources.

150. The Methodology provides the sources of the prices for the alternate energy sources. The following table describes the data required and the sources of the data:

<table>
<thead>
<tr>
<th>Energy Indicator</th>
<th>Source of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>International Monetary Fund: Actual Market Prices for Non-Fuel and Fuel Commodities’ (Richard’s Bay Terminal, Thermal Coal-Free on Board price) 1 Converted to R/GJ</td>
</tr>
<tr>
<td>Diesel</td>
<td>South African Department of Energy: Basic Fuel Price (BFP) for Diesel Quoted in SA cents/litre converted to R/GJ</td>
</tr>
<tr>
<td>Electricity</td>
<td>Eskom average tariff approved by the Energy Regulator, cents per KWh, converted to R/GJ. <a href="http://www.nersa.org.za">www.nersa.org.za</a></td>
</tr>
<tr>
<td>Heavy fuel oil</td>
<td>United Kingdom Department of Energy and Climate Change. <a href="http://www.decc.gov.uk">www.decc.gov.uk</a> converted to R/GJ</td>
</tr>
<tr>
<td>LPG</td>
<td>South African Department of Energy: Maximum Refinery Gate Price (Coast) for LPG <a href="http://www.energy.gov.za">www.energy.gov.za</a> , converted to R/GJ</td>
</tr>
</tbody>
</table>


Note: The IMF data no longer contains a price for South African coal. For the purposes of this calculation, we have used World Bank data, available: [http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1111002388669/829392-1420582283771/Pnk_0915.pdf](http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1111002388669/829392-1420582283771/Pnk_0915.pdf).

151. The prices used in the calculation have to be the average over 12 months prior to the period for which the piped-gas price is being determined. For this calculation, we have used the latest available data for each of the indicators. It is important to note:

151.1. For HFO, we have used quarterly averages. The quarterly data is only available up to the first quarter of 2015.

151.2. For thermal coal we have used quarterly averages. The quarterly data is only available up to the second quarter of 2015.

151.3. The prices have to be converted from the currencies and units in which they are provided to a Rand per gigajoule value. The exchange rates are to be based on the monthly exchange rates provided by the Reserve Bank. The exchange rate data from the Reserve Bank only goes up to April 2015. Thus the exchange rates utilized in the calculation is the average from May 2015 to April 2015.

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\(^{122}\) NERSA (2011), Methodology to approve maximum prices of piped-gas in South Africa
152. The conversion to Rand per gigajoule can be done using the conversion factors provided by Nersa on page 35 of the Methodology.

**Table 20: Conversion factors**

<table>
<thead>
<tr>
<th>Energy indicator</th>
<th>Factor</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>27</td>
<td>GJ per tonne</td>
</tr>
<tr>
<td>Heavy Fuel Oil</td>
<td>43</td>
<td>GJ per tonne</td>
</tr>
<tr>
<td>Electricity</td>
<td>0.0036</td>
<td>GJ per kWh</td>
</tr>
<tr>
<td>Diesel</td>
<td>0.0381</td>
<td>GJ per litre</td>
</tr>
<tr>
<td>LPG</td>
<td>0.0267</td>
<td>GJ per litre</td>
</tr>
</tbody>
</table>

Source: NERSA (2011), Methodology to approve maximum prices of piped-gas in South Africa p. 35

153. The converted prices are then combined as a weighted average to arrive at the gas price. The weights are based on each indicator's share of consumption in South Africa. The weights are given on page 34 of the Methodology.

**Table 21: Energy indicator weights**

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Total Final Consumption in Terajoules (TJ)¹</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>795,858</td>
<td>37.24%</td>
</tr>
<tr>
<td>Diesel</td>
<td>520,952</td>
<td>24.38%</td>
</tr>
<tr>
<td>Heavy Fuel Oil</td>
<td>23,648</td>
<td>1.11%</td>
</tr>
<tr>
<td>LPG</td>
<td>17,323</td>
<td>0.81%</td>
</tr>
<tr>
<td>Electricity</td>
<td>779,140</td>
<td>36.46%</td>
</tr>
<tr>
<td>Total</td>
<td>2,136,921</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: NERSA (2011), Methodology to approve maximum prices of piped-gas in South Africa p. 34

154. The table below shows our calculation of the final gas price based on the data from the period July 2014 to June 2015.

**Table 22: Maximum gas price calculation**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Energy Form</th>
<th>Market price ZAR cents per Litre/kWh</th>
<th>Market price US$ or GBP per tonne</th>
<th>Energy Value GJ per tonne or litre or kWh</th>
<th>Energy Price Rands/GJ</th>
<th>Weights % f</th>
<th>Gas Energy Price R/GJ g=efx</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thermal Coal</td>
<td>64.7000</td>
<td>27</td>
<td>26.7985</td>
<td>37.24%</td>
<td>9.9806</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Heavy Fuel Oil</td>
<td>483.6750</td>
<td>43</td>
<td>200.5514</td>
<td>1.11%</td>
<td>2.2194</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Electricity</td>
<td>70.75</td>
<td>0.0036</td>
<td>196.5278</td>
<td>36.46%</td>
<td>71.6557</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Diesel</td>
<td>682.1300</td>
<td>0.0381</td>
<td>179.0367</td>
<td>24.38%</td>
<td>43.6467</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>LPG</td>
<td>486.6900</td>
<td>0.0267</td>
<td>182.2809</td>
<td>0.81%</td>
<td>1.4777</td>
<td></td>
</tr>
</tbody>
</table>

Maximum Price (ZAR per GJ) 100.00% 128.9801

Source: Genesis calculations.
APPENDIX 2: POTENTIAL NEW SOURCES OF SUPPLY OF NATURAL GAS

155. Onshore indigenous gas reserves are mostly in the form of shale gas in the Karoo Basin. A study by the United States Energy Information Agency (EIA) indicated that there may be as much as 485Tcf recoverable reserves of shale gas in the Karoo Basin. However, a revised 2013 estimate of the Karoo gas potential by the United States Energy Information Administration is in the order of 390Tcf, or approximately 5.3% of the world natural gas reserves.\textsuperscript{123}

156. Doubts have been expressed regarding the extent of recoverable shale gas reserves in South Africa. PASA was unable to confirm the EIA estimate, and concluded that the extent of the reserves can only be proven through further technical studies and drilling of wells and that such gas extraction is viable.\textsuperscript{124}

157. Coalbed Methane (CBM) is considered to be an additional onshore potential, located in the Waterberg region as well as more than 67 exploration areas under application at the PASA.\textsuperscript{125} The Waterberg CBM project by Anglo Operations’ has estimated extractable reserves of 1Tcf, and is located in close proximity to the electricity grid and power stations, thereby increasing the bargaining power of suppliers and thus enhancing the feasibility of the project.

158. Offshore exploration of indigenous reserves are taking place in Block 2A by Forest Exploration International, Block 3B by BHP Billiton, Block 9 by PetroSA, Block 11 by Canadian Natural Resources and Block 11A by PetroSA.\textsuperscript{126}

159. Domestic gas exploration is taking place at the Ibhubesi gas field, which is located 105km off the coast of the Northern Cape Province and 380kn north-west of Cape Town in block 2A within the Orange Basin\textsuperscript{127}. Forest Exploration International (Forest) who acted as the operator and owned 53.2% recently sold their stake to Sunbird (?).\textsuperscript{128} Energy. PetroSA has a 24% interest and Anshutz owns the remaining 22.8%.

160. The Ibhubesi gas field is expected to contain proven and probable reserves of approximately 540 billion cubic feet of gas.\textsuperscript{129} Eight wells have been drilled thus far, and according to PASA, it is a gas field with multi trillion cubic feet (multi-tcf) potential.\textsuperscript{130} Due to the insufficient demand of gas and a lack of infrastructure, such gas exploration has thus far been stranded. Former owned Forest, however, intended to commercialise the gas through the construction of a pipeline from the gas field to the shore such that it enables the supply of gas to a 750MW combined cycle gas turbine (CCGT) power plant.\textsuperscript{130} Sunbird Energy, the current operator of the Ibhubesi Gas Project, has reached

\textsuperscript{123} Transnet (2014) Impact assessment of natural gas, LTPF, p.318
\textsuperscript{124} PWC (2011) An analysis of the potential of the natural gas industry in South Africa, p.11
\textsuperscript{125} PWC (2011) An analysis of the potential of the natural gas industry in South Africa, p.11
\textsuperscript{126} PWC (2011) An analysis of the potential of the natural gas industry in South Africa, p.11
\textsuperscript{129} PWC (2011) An analysis of the potential of the natural gas industry in South Africa, p.12
\textsuperscript{130} PWC (2011) An analysis of the potential of the natural gas industry in South Africa, p.12

161. Several other sources of gas exist outside of South Africa. The anchor project for the Kudu gas field off the Namibian coast has been under development for some time. This project involves an 800MW CCCT power plant\footnote{Transnet (2014) Impact assessment of natural gas, LTPF, p.323} in Namibia with an estimated reserve of approximately 1.8tcf, which would, if implemented, largely preclude gas sales to South Africa.

162. Significant discoveries in Tanzania and Mozambique add to the potential source of natural gas reserves. Estimated reserves in Tanzania are 34 billion cubic meters (bcm), with a potential of 2026bcm.\footnote{Transnet (2014) Impact assessment of natural gas, LTPF, p.323} Project developments in Tanzania include gas production from the Songo-Songo field with a pipeline to Dar es Salaam, new pipelines from Mnazi Bay gas field to Dar es Salaam, power plants and city gas distribution and government focus on local development first before LNG exports.\footnote{Transnet (2014) Impact assessment of natural gas, LTPF, p.323}

163. LNG developments in Angola prove to be an additional regional source of supply with an estimated reserve of 275bcm. The construction of the 5.2mtpa LNG liquefaction plant at Soyo is currently in progress and aims to provide 3450m$^3$/day for consumption purposes.\footnote{Transnet (2014) Impact assessment of natural gas, LTPF, p.323}

164. Kenya has a significant potential in natural gas, although exploration has been lagging in the past, partly due to licensing uncertainty. The US company Apache has been the first to discover offshore natural gas in Kenya, but has announced to exit the country and focus on other projects. The company’s partnership with Tullow and the Australian company, Pancontinental failed to find commercial reserves at its Mbawa-1 well.\footnote{http://www.oxfordbusinessgroup.com/news/recent-discoveries-kenya-highlight-oil-and-gas-potential}

165. Other sources of gas include regasified LNG that can be procured from various regional markets.

\textsuperscript{132} Transnet (2014) Impact assessment of natural gas, LTPF, p.323
\textsuperscript{133} Transnet (2014) Impact assessment of natural gas, LTPF, p.323
\textsuperscript{134} Transnet (2014) Impact assessment of natural gas, LTPF, p.323
\textsuperscript{135} Transnet (2014) Impact assessment of natural gas, LTPF, p.323
APPENDIX 3: CASE PRECEDENT

166. This section summarises the relevant case precedent from international jurisdictions that deal with the definition of gas markets.

167. The EC has identified a number of distinct product markets in the gas sector. The EC has defined the following markets for the transport and supply of gas:

167.1. Transmission of gas, involving the transport of gas through high pressure networks for wholesale suppliers to resell to other wholesalers, distributors or large industrial consumers.

167.2. Distribution of gas, relating to the transport of gas through medium or low pressure systems for distributors to supply end consumers. The EC distinguished between the transmission and distribution transport markets due to the differences in customers, distances and regulations between the two types of networks.

167.3. Wholesale supply of gas, encompassing the sale of gas by gas companies that acquire gas from producers to wholesalers or downstream distributors. In certain cases, the EC has separated the wholesale supply of the gas market into the long-distance wholesale gas supply market to regional wholesale companies and the short-distance wholesale gas supply market to local distribution companies.

167.4. Retail supply of gas, commonly subdivided into separate markets for the supply of gas to electricity plants, large industrial customers, small industrial customers, and household customers. In other cases, the EC has separated the retail supply of the gas market between large industrial customers and smaller customers. The EC differentiated between these various product markets on the basis of customers’ use of gas, consumption volume, incentive and ability to switch between suppliers, connection to transmission networks, and purchase price.

167.5. The EC has also identified separate relevant product markets for the exploration and production of gas, importation of gas, and storage of gas.

168. The EC has further subdivided the supply and transport markets between markets for high calorific gas (“H-gas”) and low calorific gas (“L-gas”) in a number of cases. H-gas contains a higher proportion of methane and is consequently more energy-rich and expensive than L-gas. The EC noted that the two gas types not only differed in quality but were also transmitted on different pipelines and networks. The EC has also separated the gas transport markets between instances where the transport capacity was contracted.

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as firm or interruptible capacity, noting that traders differentiated between the two types of capacity.\textsuperscript{146}

169. The geographic markets the EC has defined for these product markets are outlined below. In determining these geographic markets, the EC often appealed to the decisions of the relevant national regulatory or competition authority.\textsuperscript{149}

169.1. \textit{Transmission of gas.} The EC has generally determined that the geographic market for gas transmission was national, although it has considered narrower definitions such as the region covered by the transmission grid.\textsuperscript{150}

169.2. \textit{Distribution of gas.} The EC has often defined the geographic market for gas distribution as national or local.\textsuperscript{151} The area of the distribution grid was the narrowest definition the EC would entertain.\textsuperscript{152}

169.3. \textit{Wholesale supply of gas.} The EC has suggested that the geographic market for the wholesale supply of gas was at least national and possibly wider.\textsuperscript{153} However, the EC has also found in other decisions that the geographic market for the short-distance wholesale supply of gas was grid-wide.\textsuperscript{154}

169.4. \textit{Retail supply of gas.} The EC has largely found the geographic market for the retail supply of gas to be national, although it had also considered regional markets, particularly in the case of the market for retail supply to household customers.\textsuperscript{155}

170. US courts have been less consistent in their definitions of the relevant product and geographic markets.

170.1. In \textit{Energy Marketing Services Inc. v. Columbia Gas Transmission Corporation}, the District Court concurred with the economic expert’s definition of the relevant market as the wholesale and retail market for gas in the markets served by the Columbia Gas Transmission Corporation pipeline system.\textsuperscript{156}

170.2. In \textit{Colorado Interstate Gas Company v. Natural Gas Pipeline Company of America and NGPL-Trailblazer Inc.}, the District Court determined that the case involved three separate product and geographic markets, namely:\textsuperscript{157}

170.2.1. The purchase of natural gas produced in the Rocky Mountain area, Wyoming, Colorado, Utah, the Overthrust area and other gas producing areas of Wyoming, Colorado, and Utah.

170.2.2. The transportation of natural gas produced in the Rocky Mountain area, Wyoming, Colorado and Utah, and the Overthrust areas of Wyoming, Colorado and Utah.

170.2.3. The sale of gas in eastern Colorado and southeastern Wyoming.

170.3. Earlier cases involving the natural gas sector have identified the relevant line of commerce as the natural gas industry, incorporating the production, transportation and sale of natural gas.\textsuperscript{158}

170.3.1. Under this product market definition, the Court of Appeals found in \textit{Northern Natural Gas Co and Northern Natural Gas Transportation Co v. Federal Power Commission} that the geographic market for the natural gas industry could be "\textit{easily defined by reference to the disputed pipelines}" and later assessed the effect of the transaction on the Michigan-Wisconsin geographic market\textsuperscript{159}

170.3.2. The Supreme Court determined in \textit{United States v. El Paso Natural Gas Co et al} that the geographic market for the production, transportation and sale of natural gas was the Californian market\textsuperscript{160}

171. The product and geographic dimensions of the relevant market defined by particular OECD countries are outlined below:

171.1. In the UK, the Office of Gas and Electricity Market ("Ofgem") appears to differentiate between a similar set of markets to the EC in the gas sector, namely the wholesale market, retail market, transmission networks and distribution networks\textsuperscript{161}

171.2. The Competition Bureau in Canada has identified separate relevant product for natural gas exploration, production, transmission, gathering, and marketing. When considering the marketing of natural gas, the Competition Bureau distinguishes between different markets depending upon the type of customers. The relevant geographic markets for the production and exploration of natural gas were within Canada and North America\textsuperscript{162}

171.3. In the Czech Republic, the relevant product market in the gas industry has been defined as the market for gas supply to final consumers, with the relevant geographic market being the area which is covered by a network system of a particular distribution company\textsuperscript{163}

171.4. The Federal Competition Commission ("CFC") in Mexico has identified the transportation, storage and distribution of natural gas as the relevant product market. The relevant geographic market has been defined as the areas potential consumers would be indifferent to supply access.


\textsuperscript{159} United States Court of Appeals for the District of Columbia Circuit, Northern Natural Gas Co. and Northern Natural gas Transportation Co., v. Federal Power Commission, 399 F.2d 953; 130 U.S. App. D.C. 220. 1968, p. 6 and 7

\textsuperscript{160} Supreme Court. 1964. United States v. El Paso Natural Gas Co et al, p. 2

\textsuperscript{161} Ofgem. Gas. available at: https://www.ofgem.gov.uk/gas


## APPENDIX 4: NOVO ENERGY AND VGN/NGV CUSTOMERS

### VGN/NGV customer locations

<table>
<thead>
<tr>
<th>Customer name</th>
<th>Area</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Canin</td>
<td>North Riding, Johannesburg</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Nature's Dream</td>
<td>Roodepoort</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Kromdraai</td>
<td>Close to Krugersdorp</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Epic Foods</td>
<td>Aeroton</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Randburg</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Filling Stations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langlaagte</td>
<td>Johannesburg</td>
<td>Gauteng</td>
</tr>
</tbody>
</table>

### Novo Energy customer locations

<table>
<thead>
<tr>
<th>Customer name</th>
<th>Area</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insimbi Alluminium Alloys</td>
<td>Benoni</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Garden Court O.R. Tambo</td>
<td>Johannesburg</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Aldor Africa</td>
<td>Johannesburg</td>
<td>Gauteng</td>
</tr>
<tr>
<td>KT Wash</td>
<td>Nigel</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Dynovest Animal Feeds and Powders (Pty) Ltd</td>
<td>The location of this customer was not found. It is assumed that it is also located in the east of Johannesburg</td>
<td>Gauteng</td>
</tr>
</tbody>
</table>