An economic framework to assess the adequacy of competition in the piped-gas industry

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1. INTRODUCTION

1. 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 mandates 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 making a finding that there is inadequate competition in the market as contemplated in Chapters 2 and 3 of Competition Act No. 89 of 1998.

2. NERSA has previously undertaken such an 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 requires the development of an economic framework model that can be used by NERSA 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 adequate competition in the relevant South African gas markets should be undertaken.

3. This document is the first of these components. The economic framework for the assessment of the adequacy of the competition in the piped-gas industry has been developed taking into consideration the factors that impact on the intensity of competition in the industry. The framework also provides guidance on the manner in which relevant gas markets should be defined as this forms the basis for any assessment of the level of competition. The economic framework document is accompanied by an excel based model that contains the data and calculations used in the assessment of the adequacy of competition in the piped-gas market. This model is accompanied by a guideline document which explains how the model is used and how it can be updated.

4. This framework is structured into two sections: defining the relevant market and the assessment of inadequate competition.

   4.1. The first section explores the tools and concepts used to define relevant markets. It provides an explanation of what is a relevant market, how to define markets in respect of the both product and geographic dimensions, the different types of markets and the information used to define markets. It also discusses relevant case precedent which is often used as a practical tool by competition and regulatory authorities as a guide on how to define markets in specific industries.

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\(^1\) 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)
4.2. The second section explores the factors taken into consideration in the assessment of the extent of competition in a market. Some of these factors include the level and trend in concentration in the market, barriers to entry and exit, the extent of vertical integration and countervailing power of buyers. These and other factors relevant to NERSA's mandate are dealt with in this section. An important starting point for the assessment of the level of competition in the piped-gas market is the definition of 'inadequate competition'. To do this, we draw on various sources including the Competition Act and approaches used by other regulators to develop a definition for 'inadequate competition'.

5. Before delving into the detailed economic framework, we first provide a summary of the framework including the steps and tools and concepts involved in the assessment.
2. SUMMARY OF THE ECONOMIC FRAMEWORK

6. The economic framework to assess the adequacy of competition in the piped-gas industry can be divided into three steps:

   6.1. Step 1: Defining the relevant market(s);

   6.2. Step 2: Analysis of the factors that indicate the level of competition; and

   6.3. Step 3: Determination of the adequacy of competition.

7. A description of each of the steps is provided in the figure below together with the tools and concepts used in each step and the outcome at the end of each step.
Figure 1: Summary of economic framework to assess the adequacy of competition in the piped-gas industry

1. Defining the relevant market/s
   - Market definition serves to establish a frame of reference used to identify and analyse competitive dynamics. A relevant market has both a product and geographic dimension.
   - Tools and concepts:
     - The hypothetical monopolist test (SSNP)
     - Product market: Demand and supply side substitutability
       - Type of product market: temporal, seasonal, multiple
       - Information required such as evidence of substitution, customer preferences, switching costs, etc.
     - Geographic market: Demand and supply side substitutability
       - Type of geographic market: local, provincial, national
       - Information required such as level of imports, switching costs, demand characteristics, transport costs, etc.
     - Case precedent is useful starting point to inform the definition of relevant markets. It entails assessing how other jurisdictions have defined relevant markets for the particular product or service under consideration.

2. Analysis of factors that indicate the level of competition
   - The analysis of a number of different factors for each of the identified relevant markets is used to determine whether there is adequate competition in a market.
   - Tools and concepts:
     - Definition of inadequate competition
       - A level of competition below the desirable level where one or more firms possess market power.
     - Analysis of factors that indicate the level of competition:
       - Level of concentration including market shares, concentration ratios and HHI
       - Barriers to entry and expansion
       - Counteracting buyer power
       - Dynamic characteristics of the market
       - Level of vertical integration
       - Access to network infrastructure
       - Evidence of the competitive conduct of firms
     - Case precedent can also be useful when analysing these factors. It can assist in determining how market shares should be calculated. However, note that this should only be used as a guide and the analysis will depend on the specific context of the market under consideration.

3. Determination of the adequacy of competition
   - Using the results of the analysis of different factors, a determination is made of whether there is inadequate competition in the relevant market/s.
   - Tools and concepts:
     - There is no formula or weighting that can be applied to the different factors to determine whether there is inadequate competition or not.
     - The results of all the factors need to be considered collectively to determine if there is inadequate competition.
     - Some factors such as the level of concentration indicate whether the market is competitive or not. Other factors indicate why the market may or may not be competitive.
     - Based on the results of the analysis of the factors, a determination of whether there is inadequate competition in the relevant market/s.
3. DEFINING THE RELEVANT MARKET

3.1. THE RELEVANT MARKET CONCEPT

8. 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.\(^2\)

9. Market definitions are commonly used for the assessment of mergers between firms and abuse of dominance investigations. Motta (2004) advocates that the relevant market is "the set of products, and geographic areas, to which the products of merging firms belong"\(^3\), and which exhibit some competitive constraint on each other. The concepts of demand and supply side substitutability are used in order to define the relevant product and geographic markets.

9.1. **Demand-side substitutability** refers to the extent to which consumers substitute the product in question to an alternative product following small, permanent changes in relative prices.\(^4\) 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.\(^5\)

9.2. **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.\(^6\) 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.\(^7\)

10. In essence, the relevant product market includes a product or group of products which serve as substitutes by consumers or are interchangeable. This point is elucidated by the European Commission ("EC") which defines the relevant product market as comprising "all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their price and their intended use".\(^8\) In addition, Whish and Bailey (2012) comment that "where goods or services can be regarded as interchangeable, they are within the same product market".\(^9\)

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\(^4\) EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 15

\(^5\) EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 19

\(^6\) EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 20


\(^8\) EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 7

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 the conditions of competition are substantially different from the conditions in neighbouring areas.\(^\text{10}\)

The US Department of Justice (“DoJ”) distinguishes between two approaches it uses in defining a geographic market. The DoJ will usually assess the scope of a geographic market based on the location of suppliers in markets where firms do not engage in price discrimination. In markets where price discrimination based on customer location is feasible, the DoJ will tend to evaluate the extent of the geographic market based on the location of customers.\(^\text{11}\)

3.2. **HOW TO DEFINE A MARKET**

13. A specific exercise which may be used to establish whether a particular product or area fits into the relevant product and geographic markets respectively is the hypothetical monopolist test, also known as the small but significant, non-transitory increase in prices test (“SSNIP test”).

3.2.1. **Product market**

14. In order to use the SSNIP test to define the relevant product market, we start with the smallest conceivable group of products, and suppose that there is a hypothetical monopolist in control of that product group (or focal product). The question to be answered is whether the hypothetical monopolist would have sufficient market power to profitably impose a small but significant non-transitory increase in the price of its product by 5-10% above competitive levels.\(^\text{12}\) If such a price rise is profitable, the product does not face any competitive constraints from possible substitutes. If the price rise is unprofitable due to a resulting loss of sales which can be attributed to consumers substituting to alternate products, these additional substitutes are then added to the relevant product market, and again, we ask the question of whether the hypothetical monopolist can profitably raise prices by 5-10%. This iterative process continues until the price rise is profitable.\(^\text{13}\) At this point, the substitutable products contained in the hypothetical market can be considered as comprising the relevant market.

15. The SSNIP test essentially establishes the cross-price elasticity of demand and therefore provides an indication of the degree of substitutability between two products. Products that are perfect substitutes with one another have an infinite cross-elasticity of demand, whereby a rise in the price of one product instigates a complete switch in consumer demand to the alternative product. Products that are not substitutes are characterised by a cross-elasticity of zero. In such instances, the price of one product will have no influence on the demand for the other.\(^\text{14}\)

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\(^\text{10}\) EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 8
\(^\text{12}\) The U.S. Department of Justice refers to a 5% increase in price, whereas the EC and UK guidelines refer to a 5-10% increase
16. The different steps which need to be performed when one undertakes the SSNIP test are presented below.

Step 1: Start with the smallest conceivable market (either in terms of product or geographic area).

Step 2: Hypothetically group all firms producing the focal product or in the focal area into one hypothetical monopolist.

Step 3: Ask, could the hypothetical monopolist raise price by 5%-10% above the competitive level?

Step 4: If no, the hypothetical monopolist is being constrained by products/firms outside of the "market" and so the market should be widened to include more products/firms.

Step 5: Again group all firms in the now large focal "market" into a single firm and repeat step 3.

3.2.2. Geographic market

17. The procedure adopted to define the relevant geographic market is similar to that described for the product market. However, instead of starting with the smallest conceivable group of products, we start with the smallest conceivable market area. The question asked is whether the hypothetical monopolist supplying the entire area can profitably impose a small but significant non-transitory increase in prices. If not, the market area is expanded and the process is repeated. The relevant geographic market is therefore given by the market area whereupon the price increase would be profitable for the hypothetical monopolist.¹⁵

3.2.3. Difficulties encountered when applying the SSNIP test in a non-merger context

18. The SSNIP test presents some difficulties when applied to non-merger cases, best illustrated by a famous case, the so-called 'cellophane fallacy.' The cellophane fallacy argument proposes 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 a too wide definition of the market, as the supplier may already have exercised market power by raising the price of the product above the competitive price, leading customers to switch in case of further price increases above the current, monopoly price.¹⁶ Hence, 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

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¹⁶ 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.
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{17}

19. An additional difficulty which arises through the implementation of the hypothetical
monopolist test relates to the selection of an appropriate price and the relevant SSNIP
commensurate with it. This is particularly the case when the product of interest is part of
the production process, as in the piped-gas industry.\textsuperscript{18} The SSNIP test also tends to
become more complicated when one factors in costs such as high switching costs,
infrastructure requirements and operational costs associated with the price of gas
transportation, rather than the delivered price of gas.

3.3. TYPES OF PRODUCT MARKETS

20. There are a number of ways in which product markets can be defined. The most common
are product characteristics, functionality and customer categories. Other potential bases
include:

20.1. A possible third product dimension, viz. time. The timing of the production and
purchasing of the product or service can be used to segment the market. For example, in telecommunications and electricity pricing, there are different rates for
peak and off-peak usage.

20.2. Differentiated products. Products can also be differentiated with each producing
firm differentiating their product in some way from their competitors’ products.
Products can be differentiated by brand, location and quality.

20.3. Portfolios of products. The product market is defined as a “bundle” of products, e.g.
“one stop grocery shopping”. This is often case dependent and is based on
customer perceptions.

20.4. After-markets (or secondary markets): Several circumstances arise where a
specific secondary product is designed for, and can only fit a specific brand of the
primary product. When deciding on whether the secondary product should be
defined as a separate market from the primary product, the following variables
should be taken into consideration:\textsuperscript{19}

20.4.1. Whether or not the price of the secondary product is a considerable
proportion of the price of the primary product;

20.4.2. the probability of replacing the secondary product; and

20.4.3. the differences in sophistication between buyers.

20.5. Innovative markets: These products are considered to be separate from products
that are already on the market. In some cases, innovative markets have been
identified in high technology industries.\textsuperscript{20}

3.4. INFORMATION USED TO DEFINE THE PRODUCT MARKET

21. Competition practitioners use a range of data or evidence to define a product market. These can be categorised as follows:

22. Evidence of substitution in the recent past: The manner in which customer purchases have shifted in the past in response to relative changes in price, or other terms and conditions can inform the product market definition. In addition, the launch of new products in the past could also provide useful information if it is possible to determine which products have lost sales to the new product.

23. Evidence from companies active in the market and their commercial strategies: This may provide an indication of which products a firm under consideration views as its closest substitutes. In addition, company documents such as internal communications, public statements, and business plans may prove to be useful.

24. Quantitative tests: A number of quantitative tests have been designed for the purpose of defining markets. These tests include:

24.1. Own-price elasticity: Measures the extent to which the quantity of a product demanded changes in response to a percentage increase in the price of the product.

24.2. Cross-price elasticity: Measures the extent to which the quantity of one product changes in response to a change in the price of another product.

24.3. Price correlation tests: These tests assess how prices of different products evolve over time. The central idea is that if two products belong to the same market, the prices will tend to move in the same direction over time. Therefore, the higher the correlation, the greater the likelihood that these two products would be in the same market.

25. Views of customers and competitors: Information from customers and competitors regarding how they would respond when there are changes in relative prices. It is important to note that these views should ideally only be taken into account when they are backed by factual evidence.

26. Consumer preferences: Consumer surveys and market research studies contribute to an understanding of consumer preferences, and whether a significant proportion of consumers perceive two products as being substitutable.

27. Barriers and costs associated with switching demand to potential substitutes: These barriers and/or costs may prevent apparent substitutes from belonging to a single product

22 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 38
23 OFT (2004) Market definition, Understanding competition law, para. 3.7
28 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 40
Examples of such barriers and costs include: regulatory requirements such as the meeting of certain safety standards or specified contract durations, the level of investment required to switch to alternative inputs (switching costs), the location of consumers relative to suppliers, and uncertainty regarding the quality and reputation of suppliers.

28. **Different categories of customers and price discrimination:** The extent of the product market may be narrowed in the presence of distinct groups of customers for a particular product. A narrow, distinct group of customers could be subject to price discrimination if, during the moment of selling a product, it is clearly identifiable as to which group an individual customer belongs, and there is no possibility of trade between the different categories of customers.

29. **Consistency of market definitions over time:** There may be circumstances in which the same firm or similar products are investigated on different occasions. It is considered good practice when competition and regulatory authorities adopt the same definition of the market for similar problems, however, one must account for the change in consumer preferences and technological advances over time.

30. A number of different quantitative techniques can be used in defining relevant markets. In undertaking the market definition exercise as part of the second part of this project (i.e. the assessment of the adequacy of competition in the piped-gas market), none of these techniques have been used in the assessment of the relevant markets. We have not used these techniques for the following reasons. Firstly, the application of these techniques requires significant amounts of data to be useful. In most cases, detailed data on customer purchases is required which is not available in this instance. Secondly, when sufficient data is available to run these tests, the results may also be unreliable. Issues with structural breaks in the data and time lags in responses to price changes can result in unreliable results. In this case, the change in the pricing regime over the relevant period of analysis can be regarded as a structural break.

### 3.5. TYPES OF GEOGRAPHIC MARKETS

31. The scope of the geographic market, on the basis of evidence gathered, could range from a local market to one with a global dimension.

31.1. **Local markets:** A market is defined as local if customers are unable or unwilling to source a particular product outside a particular area, for instance due to prohibitive transportation costs. For example, the market for cement may be defined as local due to the high costs associated with transporting cement products.

31.2. **National markets:** Generally, these markets are country wide as suppliers and customers are located throughout the country and the product involved can be readily transported across regional borders.

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31 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 42
32 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 43
34 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 51
31.3. **Global markets**: The market is defined as broader than the borders of a single country. This is generally the case if the industry is characterised by a high level of imports from other countries. In such markets, the price of the product is determined globally.

32. An important aspect of the geographic market definition is the consideration of the role of imports.

32.1. *The role of imports (shipment test)*: The shipment test has two components. Firstly, it seeks to establish whether imports account for a small portion of local consumption, and secondly, whether exports account for a small portion of local production. If these two conditions are satisfied such that there is minimal movement of the relevant product between the two geographic regions, then the given geographical area may be defined as the relevant geographic market.

3.6. **INFORMATION USED TO DEFINE THE GEOGRAPHIC MARKET**

33. Competition practitioners use a range of data or evidence to define a geographic market. These can be categorised as follows:

33.1. *Past evidence of diversion of purchases to other areas*: The manner in which purchases have been shifted in the past between different geographic locations in response to changes in relative prices or other terms and conditions can assist in defining the relevant geographic markets. Price comparisons between international markets are complicated by factors such as exchange rates, taxation and product differentiation.

33.2. *Current geographic pattern of purchases*: An examination of where customers currently purchase goods or supplies from would provide useful evidence for the scope of the geographic market.

33.3. *Transportation costs*: The impact of transport costs and transport restrictions is to limit the scope of the geographic market, particularly, for bulky, low-value products. However, such a transport disadvantage may be compensated by a comparative advantage in other costs. The OFT advocates that the value of a product in relation to the costs of search and transport is an important factor. Particularly, the higher the relative value, the more likely consumers will travel a longer distance in search of cheaper suppliers.

33.4. *Barriers and switching costs*: Barriers isolating a specific geographic market include the lack of access to distribution networks within a certain area, regulatory barriers in certain sectors, and quotas and custom tariffs. An additional source of such

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37 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 45
39 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 50
40 OFT (2004) Market definition, Understanding competition law. para. 4.3
41 EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 50
barriers includes the costs and delays of switching from suppliers in one geographic market to suppliers in another market.\footnote{DoJ and FTC (2010) Horizontal Merger Guidelines, p. 14}

33.5. \textit{Basic demand characteristics:} Taking into consideration factors such as national preferences, language, culture, lifestyle and the need for local presence has a strong potential to limit the geographic scope for competition.\footnote{EC (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 46}

3.7. \textbf{SUMMARY OF THE INFORMATION USED TO DEFINE PRODUCT AND GEOGRAPHIC MARKETS}

34. Competition practitioners use a range of data or evidence to define a product and geographic market, however, this definition does not need to be based on all of these factors. Rather, it depends on the nature of the product/service being analysed as well as the data currently available. The key factors taken into consideration are presented below.

- 1. Evidence of substitution in the past
- 2. Evidence from firms active in the market and their commercial strategies
- 3. Quantitative tests, such as examinations of own and cross price elasticity, and price correlation
- 4. Views of customers and competitors on the substitutability of products
- 5. Consumer preferences as evident from consumer surveys and market research studies
- 6. Barriers and costs associated with switching demand or production to potential substitutes
- 7. Presence of different categories of customers in the industry
- 8. International and local case precedent on the relevant market
- 9. Transportation costs and restrictions

3.8. \textbf{CASE PRECEDENT}

35. Case precedent serves as a useful starting point for establishing a frame of reference for conducting an analysis of a market or current investigation. In particular, it can be used to inform the definition of relevant markets. Case precedent serves as a guideline for the different elements that need to be assessed in defining relevant markets, and the evidence required for such assessments. Both local and international jurisdictions tend to give considerable weight to the analysis and conclusions drawn from case precedent. However, it is important to recognise that markets in other countries may be considerably different to the same markets in South Africa. These differences may reduce the comparability between South African and international markets, limiting the usefulness of international case precedent.
36. Case precedent enables regulators to take advantage of lessons learnt in other jurisdictions, serves as a consistency check on market definitions, as well as a source of economic logic when defining a market within a particular industry. Critically, case precedent provides regulators with information for pre-empting and addressing arguments that may be raised by the different parties in a particular market assessment.

Box 1: Competition Tribunal decision in the large merger between Bromor Foods (Pty) Ltd. and National Brand Limited:

"Defining a relevant market for consumer products is notoriously difficult. Delineating a relevant market for beverage products is especially difficult because one is faced with not only the subjective proclivities of consumers but also the marketing stratagems of firms as they attempt to differentiate their products in response to competitive threats.

Beverage antitrust cases have long been the subject of bitter contestation over relevant market definition. On the one hand merging parties contend they are merely minor players fighting for their "share of the throat", in a market where the fizzy drink competes with anything that can be imbibed from fruit juices to tea. On the other hand competition regulators argue that the fizzy drink is the relevant product market.

Ultimately each case must be determined on its own facts and foreign judgments can do no more than give us guidelines to method for they cannot serve as a way for us to come to a conclusion on facts. The behavior of a teenage consumer of carbonated beverages in Texas is no more use to us as evidence than the behavior of the French consumer of carbonated mineral water."

3.8.1. Relevant case precedent for (piped) gas

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

38. 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:

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

38.2. 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.

38.3. 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.  

38.4. *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.

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

39. 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 as firm or interruptible capacity, noting that traders differentiated between the two types of capacity.

40. 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.

40.1. *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.

40.2. *Distribution of gas*. The EC has often defined the geographic market for gas distribution as national or local. The area of the distribution grid was the narrowest definition the EC would entertain.

40.3. *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. However, the

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59 EC. (2011) F2i/AXA Funds/G6 Rete Gas. M.6302, para. 18
60 EC. (2013) EPH/Stredoslovenska Energetika. M.6984, para. 26
EC has found that the geographic market for the short-distance wholesale supply of gas was grid-wide.62

40.4. 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.63

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

41.1. In 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.64

41.2. In 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:65

41.2.1. 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.

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

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

41.3. 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.66

41.3.1. Under this product market definition, the Court of Appeals found in 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 “easily defined by reference to the disputed pipelines” and later assessed the effect of the transaction on the Michigan-Wisconsin geographic market67.
41.3.2. The Supreme Court determined in *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.68

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

42.1. 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.69

42.2. 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.70

42.3. 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.71

42.4. 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.

3.8.2. Implications for the definition of the relevant (piped) gas market in South Africa

43. The case precedent outlined above provides some useful indicators that need to be assessed against the status quo of the South African gas market. Of particular importance to this process are the South African regulatory delineations. For example, the definition of ‘gas’ in the Gas Act refers to:

43.1. “all hydrocarbon gases transported by pipeline, including natural gas, artificial gas, hydrogen rich gas, methane rich gas, synthetic gas, coal bed methane gas, liquefied natural gas, compressed natural gas, re-gasified liquefied natural gas, liquefied petroleum gas or any combination thereof.”72

44. Moreover, the licensing requirements, rights and conditions in South Africa differ for pipelines with different operating pressures. Such regulatory delineations could, for instance, pose a hurdle to effective competition between potential pipeline operators.

45. The relevant market that piped-gas is part of will be assessed according to the principles, tools and concepts outlined in this framework, taking into account the South African...

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68 Supreme Court (1964) United States v. El Paso Natural Gas Co et al, p. 2
69 Ofgem. Gas. available at: https://www.ofgem.gov.uk/gas
72 The Gas Act (No. 48 of 2001) s1
context, and through evaluating pertinent factors and factual evidence gathered from market participants.
4. ASSESSMENT OF INADEQUATE COMPETITION

46. In this section, we detail the manner in which the second and third part of the assessment can be undertaken. Specifically, we discuss how to assess the extent of competition in the defined relevant market/s. The assessment will cover a range of different factors that can be considered to determine whether there is adequate competition in the defined (piped-) gas markets. The approach to the assessment of competition entails a comprehensive analysis of the competitive dynamics in the relevant market/s.

4.1. DEFINITION OF INADEQUATE COMPETITION

47. The first step in the assessment of the extent of competition in the South African gas markets is to define what is meant by inadequate competition. The South African Gas Act (section 211(p)) mandates NERSA to approve “maximum prices for distributors, reticulators and all classes of consumers ... where there is inadequate competition as contemplated in Chapters 2 and 3 of the Competition Act, 1998 (Act no. 89 of 1998)”. Unfortunately, ‘inadequate competition’ is not mentioned or defined in the Competition Act. This therefore requires NERSA to determine what is meant by this term in order to fulfil this part of its mandate. This effectively means answering two questions. Firstly, what does inadequate competition mean? Specifically, what should the nature of competition be to be regarded as inadequate? Secondly, how does one assess the extent of competition in a market?

48. The first question poses a challenge as the term is not defined in the Competition Act nor the Gas Act and is not used by other sector regulators in South Africa. We will therefore use a combination of understanding the meaning of the individual words (the ‘literal’ meaning) and how they apply to this instance (the ‘contextual’ meaning). With respect to the first question, although no guidance is provided in the Gas Act on how NERSA should assess the extent of competition in a market, there is guidance from the Competition Act, other sector regulators and international jurisdictions on the approach to be applied in determining the extent of competition in a market. We will draw on these approaches to identify an appropriate approach that NERSA can apply.

What does inadequate competition mean?

49. It is important to determine what inadequate competition means as it guides the assessment of the level of competition and the interpretation of the results of the analysis of the different factors. The Oxford dictionary defines inadequate as “lacking the quality or quantity required; insufficient for a purpose”. This meaning applied to the phrase inadequate competition therefore suggests that the level of competition is not sufficient or lower than the desirable level. It is also analogous to the term ‘ineffective’ which is used in the Electronic Communications Act to describe the nature of competition that warrants intervention by ICASA73. It is broadly characterised in the ECA74 as a state where one (or a group) of licensees has significant market power.75 Where market power is the ability of a firm to charge prices higher than would occur in a competitive market.

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73 Independent Communications Authority of South Africa
74 Electronic Communications Act
75 Section 67(4) of the Electronic Communications Act No. 36 of 2005, as amended.
50. The Competition Act provides a definition of market power as “the power of a firm to control prices, or exclude competition or to behave to an appreciable extent independently of its competitors, customers or suppliers”\(^7\). A definition of effective competition such as that provided by competition scholar, Whish, may also be of assistance. It indicates that it is a state where there is “… a reasonable degree of competitive constraint, from actual and potential competitors and from customers” imposed on firms in the market.\(^7\) Subsequently, ineffective competition can be described as a less than reasonable degree of competitive constraint.

51. A common thread through all of these definitions is that the level of competition is not sufficient primarily due to a firm having market power and the ability to act independently of its competitors, customers or suppliers. Therefore, we suggest that an appropriate definition of inadequate competition given the guidance from the Competition Act and other sources is:-

“A level of competition below the desirable level, where one or more firms possess market power. Where market power is defined as the ability to charge prices higher than that in a competitive market or the ability of a firm in the market to behave to an appreciable extent independently of its competitors, customers and suppliers.

How does one assess the extent of competition in a market?

52. **Competition Act.** Chapters 2 and 3 of the Competition Act deal with prohibited practices and merger control respectively. Chapter 2 lists a range of practices such as horizontal practices, vertical practices and abuse of dominance conduct that is prohibited. It defines the nature of the conduct against which the conduct of the firm is tested to determine if it has contravened the Act.

53. Chapter 3 on the other hand deals with merger control and defines different types of mergers and whether they would be subject to scrutiny by the Competition Commission and/or Competition Tribunal. Section 12A(2) in Chapter 3 also details the approach to be adopted by the competition authorities in determining whether a merger is likely to substantially prevent or lessen competition. To do this, the competition authorities “… must assess the strength of competition in the relevant market…”\(^7\) The section also lists a non-exhaustive list of factors that need to be taken into account to assess the strength of competition in the relevant market, these include:

53.1. “the actual and potential level of import competition in the market;

53.2. the ease of entry into the market, including tariff and regulatory barriers;

53.3. the level, trends of concentration, and history of collusion, in the market;

53.4. the degree of countervailing power in the market;

53.5. the likelihood that the acquisition would result in the merged firm having market power;

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\(^7\) See section 1(1)(xiv) of the Competition Act for a definition of market power.

\(^7\) Whish, R., “Competition Law” Sixth Edition, Oxford University Press, pg. 18

\(^7\) The section also requires the competition authorities to assess “… the probability that the firms in the market after the merger will behave competitively or co-operatively…” This is a specific requirement for the assessment of mergers and therefore is not relevant to NERSA’s mandate to assess whether there is inadequate competition. Section, 12A(2) of the Competition Act No 89 of 1998, as amended
53.6. the dynamic characteristics of the market, including growth, innovation, and product differentiation;

53.7. the nature and extent of vertical integration in the market;

53.8. whether the business or part of the business of a party to the merger or proposed merger has failed or is likely to fail; and

53.9. whether the merger will result in the removal of an effective competitor."

54. ICASA. Similar to NERSA, the Independent Communications Authority of South Africa is mandated by section 67 of the Electronic Communications Act No. 36 of 2005, as amended, to regulate markets where there is 'ineffective competition'. The Act provides guidance to ICASA on the factors that it needs to consider when determining whether there is effective competition. These factors include but are not limited to:

54.1. “(a) the non-transitory (structural, legal, and regulatory) entry barriers to the applicable markets or market segments; and

54.2. (b) the dynamic character and functioning of the markets or market segments, including an assessment of relative market share of the various licensees or providers of exempt services in the markets or market segments, and a forward looking assessment of the relative market power of the licensees in the markets or market segments."³⁷⁹

54.3. It also defines when a licensee is considered to have significant market power. If the licensee “is dominant”, “has control of an essential facility” or “has a vertical relationship that could harm competition”, it is considered to have significant market power.⁸⁰,⁸¹

55. European Commission. Guidance on how to assess a merger’s impact on the extent of competition in a relevant market is provided by the European Commission in its 2004 Guidelines on horizontal mergers. It identifies a number of broad elements that should be considered in the assessment of a merger. These include:⁸²

55.1. Market shares and concentration thresholds;

55.2. The potential anti-competitive effects of the merger in the absence of countervailing factors;

55.3. Countervailing buyer power;

55.4. Entry and barriers to entry;

³⁷ Section 67(4A) of the Electronic Communications Act No. 36 of 2005, as amended
³⁸ Section 67(5) of the Electronic Communications Act No. 36 of 2005, as amended
³⁹ Section 1 of the Electronic Communications Act No. 36 of 2005 defines ‘dominant’ following the Competition Act’s definition in Section 7, namely that a firm is dominant in a market if it has at least 45% of that market; has at least 35%, but less than 45% of that market, unless it can show that it does not have market power; or it has less than 35% of that market, but has market power. ‘Essential facility’ is defined by the Electronic Communications Act as a facility that is exclusively or predominantly provided by a single or limited number of licensees and cannot feasibly (whether economically, environmentally or technically) be substituted or duplicated in order to provide a service. ‘Vertical relationships’ are defined by the Electronic Communications Act as delineated in Section 1 of the Competition Act, i.e. as a relationship between a firm and its suppliers, its customers or both. These definitions are outlined in the old Electronic Communications Act that has since been amended.
55.5. Potential efficiencies from the merger to counteract any harmful effects on competition and

55.6. Whether one of the firms is a failing firm.

56. An analysis of the different approaches demonstrates that there are common factors considered in by all authorities in determining the extent of competition. The table below summarises the various factors relevant and common across the authorities. The last column suggests the factors that NERSA should take into account in its assessment of the extent of competition in the relevant markets, comprising of all the factors listed above.

57. However, we also suggest that NERSA take an additional factor into consideration, viz. 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 give 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 and switching costs.

Table 1: Summary of factors used in the different jurisdictions to assess the extent of competition

<table>
<thead>
<tr>
<th>Factor</th>
<th>Competition Act</th>
<th>ICASA</th>
<th>European Commission</th>
<th>Suggested approach for NERSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of concentration including market shares</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Barriers to entry and entry</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Countervailing buyer power</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dynamic characteristics of the market including growth and innovation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Nature and extent of vertical integration</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Access to infrastructure: control of essential facilities</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Evidence of the competitive conduct of firms</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

4.2. FACTORS THAT INDICATE THE LEVEL OF COMPETITION

4.2.1. Level of concentration

58. The level of concentration provides insight into the number and competitive importance of firms that hold market power in the relevant market.\(^83\) The number of sellers in the market, market shares, concentration ratios and the Herfindahl-Hirschman Index (“HHI”) are indicators assessed by competition authorities in evaluating market concentration.\(^84\)

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\(^{84}\) EC. (2004) Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, para. 14
Number of sellers in the market

59. The number of sellers active in the relevant market influences the ability of firms to employ their market power to restrict output or raise prices.\textsuperscript{85} Customers in markets characterised by a large number of sellers may curtail firms’ attempts to exert market power by switching their purchases to alternative sellers.\textsuperscript{86}

60. The number of sellers also affects firms’ ability and incentive to engage in collusion.\textsuperscript{87} A high number of firms increases the complexity involved in engaging in collusive agreements.\textsuperscript{88} The gains from collusion will be diminished as the collusive profits would need to be split between a high number of firms.\textsuperscript{89}

61. The number of sellers in the market comprises all firms that earn revenues in the relevant market. Firms that are in the process of entering the market or are capable of rapidly shifting their production facilities to enter may be included. The number of sellers may also encompass vertically integrated firms that are competitively significant in the relevant market.\textsuperscript{90}

62. The number of sellers in the market is limited as a measure of concentration as it does not incorporate information on variations in the size and market shares of firms.\textsuperscript{91}

Market shares

63. Market shares are closely related to competitive incentives and are an important indicator of market power and the level of competition.\textsuperscript{92} For instance, firms with large market shares may be less incentivised to reduce prices to attract new customers as the price reduction will lower revenues drawn from their existing large customer pool.\textsuperscript{93} The European Court of Justice (“ECJ”) recognises the key role of market shares in assessing competition:

63.1. “The existence of a dominant position may derive from several factors which taken separately are not necessarily determinative but among these factors a highly important one is the existence of very large market shares.”\textsuperscript{94}

64. Market shares can be estimated using a variety of measures, including revenues, unit sales and capacity shares. The most suitable measure will depend on the available information and characteristics of the market at hand.\textsuperscript{95}

64.1. The DoJ prefers calculating market shares from firms’ revenues, noting that revenues are “the best measure of attractiveness to customers, since they reflect the real-world ability of firms to surmount all of the obstacles necessary to offer

\textsuperscript{86} OFT. (2004) Assessment of market power: Understanding competition law, para. 3.3
\textsuperscript{87} EC. (2004) Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, para. 45
\textsuperscript{90} DOJ and FTC. (2010) Horizontal Merger Guidelines, p. 15
\textsuperscript{91} Competition Commission and OFT. (2010) Merger Assessment Guidelines, p. 39
\textsuperscript{92} EC. (2004) Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, para. 27
\textsuperscript{93} DOJ and FTC. (2010) Horizontal Merger Guidelines, p. 15
\textsuperscript{94} ECJ. (1979) Hoffmann/La Roche. Case 85/7, para. 39
\textsuperscript{95} Competition Commission and OFT. (2010) Merger Assessment Guidelines, p. 39
products on terms and conditions that are attractive to customers.” The UK Office of Fair Trading ("OFT") concurs that market shares based on the value of sales rather than volumes are often more informative, especially where products are differentiated.97

64.2. The DoJ also notes that in markets with long-term agreements, high switching costs and customers that rarely reassess their agreements with suppliers, revenues acquired from new customers may be useful in assessing firms’ competitive significance.98

64.3. The EC has stated that market shares in terms of firms’ unit sales may be appropriate where the product involved is homogenous, or where a unit of a low priced product is readily substitutable with a unit of a higher priced product.99 Market shares in unit sales may also circumvent differences in firms’ methods of calculating sales values.100

64.4. Competition authorities find that market shares calculated from firms’ productive capacities or reserves may be the ideal approach in markets where firms’ competitiveness is strongly linked to their ability to rapidly expand production in response to market changes.101 Markets characterised by capacity constraints or that are growing rapidly may qualify.102 Capacity market shares should take into account the capacity used by suppliers for internal consumption that may be supplied to the open or ‘external’ market in the event of a price increase.103

65. The EC advocates that market shares in the production, supply, distribution and trading of gas networks are estimated using the volume of consumption and the volume of transport capacities available to suppliers.104 In addition, the EC tends to use booking capacity when estimating market share for the transmission and storage of gas.105

66. Competition authorities generally utilise current data when determining market shares. However, historic data may be analysed where market shares have been volatile.106 Market shares tend to be calculated on an annual basis. In markets with lumpy or infrequent transactions, market shares may be estimated over a longer time period.107 Market shares may also be adjusted to incorporate upcoming market changes, such as firm entry, exit or expansion.108 Competition authorities’ market investigations consider the

99 EC. (1997) Commission notice on the definition of relevant markets for the purposes of Community competition law, para. 55
103 OFT. (2004) Assessment of market power: Understanding competition law, para. 4.8. This is off course of greater relevance in a market where traders or wholesalers compete for transmission capacity. Vertical integration of a sector, adds another layer of complexity for regulators.
105 EC. (2008) ENI/DISTRIGAZ. M.5220, para. 63-68
distribution of market shares between firms as well as the stability of market shares, particularly in the face of price or cost changes.\textsuperscript{109,110}

67. Competition authorities have proposed market share thresholds to guide assessments of firms' dominance:

67.1. The Competition Commission ("CC") in South Africa proposes that "a firm is dominant in a market if it has at least 45% of that market; it has at least 35%, but less than 45% of that market, unless it can show that it does not have market power; or, it has less than 35% of that market, but has market power".\textsuperscript{111}

67.2. The OFT suggests that firms with a market share below 40% are unlikely to be dominant while firms with a market share above 50% can be presumed dominant.\textsuperscript{112}

67.3. The EC and the ECJ have not set explicit thresholds, although case precedent implies a similar approach to the OFT. In Akzo Chemise BV v. Commission, the ECJ found that a market share consistently above 50% without any contradicting evidence indicates that a firm is dominant in the relevant market.\textsuperscript{113} The EC "suggests that dominance is not likely if the undertaking's market share is below 40% in the relevant market. However, there may be specific cases below that threshold where competitors are not in a position to constrain effectively the conduct of a dominant undertaking".\textsuperscript{114}

67.4. US courts have not specified the precise market shares that enable monopoly power to be presumed, although US courts appear to require higher market shares to conclude that a firm is dominant. In United States v. Aluminium Co of America, the District Court stated "That percentage (90%) is enough to constitute a monopoly; it is doubtful whether sixty or sixty-four percent would be enough; and certainly thirty-three per cent is not."\textsuperscript{115}

Concentration ratios

68. The level of concentration can be analysed by estimating concentration ratios. The n-firm concentration ratio sums the market shares held by the n largest firms in the relevant market. The largest three of four firms are normally included in the ratio.\textsuperscript{116} Concentration ratios are employed by the EC and in other jurisdictions such as Australia, New Zealand and Canada.\textsuperscript{117}

69. Concentration ratios are limited by their inability to take into account the distribution of market shares.\textsuperscript{118} Moreover, the number of firms included in the ratio is often arbitrary and the ratio does not incorporate information from those firms that are excluded.\textsuperscript{119}

\textsuperscript{109} DoJ and FTC. 2010. Horizontal Merger Guidelines, p. 18
\textsuperscript{110} OFT. (2004) Assessment of market power: Understanding competition law, para. 4.2
\textsuperscript{111} Competition Act, Republic of South Africa, (2001) p.17 para. 7
\textsuperscript{112} OFT. (2004) Assessment of market power: Understanding competition law, para. 2.12
\textsuperscript{114} EC. (2009). Communication from the Commission - Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, para. 14
\textsuperscript{115} District Court, S.D. New York. (1950) United States v. Aluminium Co of America, p. 7
\textsuperscript{116} Competition Commission and OFT (2010) Merger Assessment Guidelines, p. 39
\textsuperscript{118} Competition Commission and OFT( 2010) Merger Assessment Guidelines, p. 39
The Herfindahl-Hirschman Index

70. The Herfindahl-Hirschman Index (“HHI”) is used to evaluate the overall concentration level in a market. The HHI is calculated as the sum of squares of the individual market shares of each of the firms active in the relevant market. The HHI thus assigns greater weight to the market shares of larger firms. The table below illustrates the HHIs that result from markets characterised by licensees with various market shares.

Table 2: HHIs resulting from various market structures

<table>
<thead>
<tr>
<th>Licensee 1</th>
<th>Licensee 2</th>
<th>Licensee 3</th>
<th>Licensee 4</th>
<th>HHI</th>
</tr>
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<tbody>
<tr>
<td>50%</td>
<td>90%</td>
<td>25%</td>
<td>25%</td>
<td>5000</td>
</tr>
<tr>
<td>50%</td>
<td>10%</td>
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<td>-</td>
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</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2500</td>
</tr>
<tr>
<td>HHIs</td>
<td>5000</td>
<td>8200</td>
<td>2500</td>
<td></td>
</tr>
</tbody>
</table>

Source: Genesis calculations

71. The Competition Tribunal makes use of the thresholds established by the DoJ for classifying markets according to their HHI.

71.1. Unconcentrated markets: HHI below 1500.

71.2. Moderately concentrated markets: HHI between 1500 and 2500.

71.3. Highly concentrated markets: HHI above 2500.

72. These thresholds should therefore be adopted by NERSA for the assessment of market concentration according to their HHI.

Example from relevant market in the South African piped-gas industry

73. The relevant retail market for the trading of gas was segmented into separate markets for industrial, vehicle and residential customers. The geographic scope of the market was left open and 2 possible definitions were investigated – a national market or separate markets for the inland region or KwaZulu-Natal. Presented below is the market share, 2 firm concentration ratio and HHI for the national retail market for the trading of gas to industrial customers.

73.1. As one can see, the market share for Sasol Gas is above 45% irrespective of whether the market is calculated using revenue or volume of sales. Based on this and the thresholds for dominance outlined in the Competition Act, Sasol Gas is dominant in the relevant market.

73.2. The second largest competitor is Spring Lights Gas with a market share of 11.5 and 17.2% based on the volume and revenue of sales for 2014 respectively.

123 A review of Tribunal cases on mergers in South Africa demonstrates its favour for the use of the HHI thresholds established by the DoJ.
73.3. The HHI for this market is calculated to be above 7 000. On the basis of the thresholds defined by the different jurisdictions for the assessment of HHI levels, the market is regarded as highly concentrated.

73.4. The 2 firm concentration ratio was calculated as there are only 4 firms active in this market. A concentration ratio with a larger number of firms would therefore not be meaningful. The 2 firm concentration is a little less than 100% indicating that only 2 firms supply almost all the market.

Table 3: Revenue and volume market shares in the national retail market for trading in gas to industrial customers for 2012-2014

<table>
<thead>
<tr>
<th></th>
<th>Revenue</th>
<th></th>
<th></th>
<th>Volume</th>
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<tr>
<td></td>
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<td>2013</td>
<td>2014</td>
<td>2012</td>
<td>2013</td>
<td>2014</td>
</tr>
<tr>
<td>Sasol Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring Lights Gas</td>
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<tr>
<td>HHI</td>
<td>7 641</td>
<td>7 394</td>
<td>7 094</td>
<td>8 272</td>
<td>7 993</td>
<td>7 934</td>
</tr>
<tr>
<td>Concentration ratio (2 firm)</td>
<td>100%</td>
<td>100%</td>
<td>99.6%</td>
<td>100%</td>
<td>100%</td>
<td>99.80%</td>
</tr>
</tbody>
</table>

Source: Genesis calculations based on information received from NERSA

4.2.2. Barriers to entry and expansion

74. The level of competition will also depend on the potential for entry into the market, and the potential for firms to expand and reach minimum efficient scale post-entry. Incumbent firms’ market power may be constrained in markets with low barriers to entry and expansion. Barriers to entry and expansion refer to the high costs or other impediments new firms face when deliberating whether to enter or expand in a particular market. The profits gained by incumbents from raising prices or restricting output would incentivise firms to enter the market, driving the price down, increasing output, and preventing the incumbents from profiting further from their market power.124

75. Entry can also undermine collusion. New entrants can destabilise the market and the collusive agreement, particularly if the entrant decides not to engage in collusion. A competitively aggressive entrant will gain market share. Colluding firms may choose to reduce prices to defend their market share, breaking the collusive agreement. An entrant that instead chooses to join the collusive agreement will require a share of the industry collusive profits. Entry will therefore reduce the profits partitioned to other colluding firms, weakening the incentive to collude.125

76. Competition authorities view entry as a competitive constraint where it is shown to be likely, timely and sufficient.126,127

76.1. Likelihood of entry: Entry into a market is deemed likely where it is profitable for the entrant given the risks, sunk costs and potential reaction of incumbent firms.128 The likelihood of entry will therefore be lower in markets characterised by low growth, high sunk costs, aggressively defensive incumbents or high economies of scale.129,130

76.2. Timeliness: Entry into the market must be sufficiently timely so as to ensure any exertion of market power by incumbent firms swiftly becomes unprofitable.131 The EC tends to view entry as timely if it is able to occur within two years, although the time period will depend on the features of the market and the potential entrants.132

76.3. Sufficiency: Entry must be sufficient in terms of its scope and magnitude. Small-scale entry or entry with a differentiated product may not be deemed sufficient to prevent competition concerns from arising in the relevant market.133

77. The likelihood, timeliness and sufficiency of entry will be determined by the level of barriers to entry in the relevant market. High barriers to entry are indicated in markets with large profits yet a lack of successful entry.134 Barriers to entry can take several forms.135

77.1. Legal and regulatory barriers to entry: Market regulation may limit entry by restricting the number of licences granted to sellers in the market.136

77.2. Technical advantages: Incumbents may enjoy established advantages unavailable to new entrants, such as economies of scale and scope, access to essential inputs or natural resources, technologies, or distribution and sales networks. Entrants may thus face capacity constraints and limited growth opportunities due their lack of access to such advantages.

77.3. Switching costs: High customer loyalty, advertising requirements or switching costs act to deter entry. Entrants may find it difficult to effectively enter a market because reputation or experience is greatly valued by customers.137,138

77.4. Sunk costs: Sunk costs of entry relate to costs that are not recoverable upon exit from the relevant market.139 Entry will be deterred where sunk costs are high and

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126 DoJ and FTC. (2010) Horizontal Merger Guidelines, p. 28
130 OFT (2004) Assessment of market power: Understanding competition law, para. 5.33
134 DoJ and FTC. (2010) Horizontal Merger Guidelines, p. 28
139 DoJ and FTC. (2010) Horizontal Merger Guidelines, p. 28
exceed the entrant’s expected profits. Sunk costs will be greater in markets where entrants need to enter on several levels of the market to be profitable.

77.5. *Reaction of the incumbent:* The incumbent may have a reputation of reacting aggressively to entry, deterring new entrants from attempting to enter the market. For instance, incumbents may respond to entry by lowering prices or securing customers through long-term contracts.

### 4.2.3. Countervailing buyer power

78. 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. If the customers are important enough to the dominant firm their bargaining power may be sufficient to prevent anti-competitive behaviour by the dominant firm. For countervailing buyer power to be an effective competitive constraint it must act to protect all market participants and not just those who hold bargaining power.

79. Countervailing buyer power can also prevent collusion. A strong buyer may be able to destabilise coordination by tempting one of the firms involved to deviate from the collusive agreement to secure its substantial orders.

80. The degree of countervailing buyer power will depend on the characteristics of the customers in the market:

80.1. Larger customers with a greater share of sales are more likely to possess countervailing buyer power than smaller firms in a fragmented industry.

80.2. Buyers that are able and incentivised to vertically integrate upstream or sponsor new entry, for instance by offering a long-term sizable contract to an entrant, are more likely to hold countervailing buyer power.

80.3. Countervailing buyer power will be greater where customers are able to switch large orders to alternative suppliers at low cost. This requires the market to have a high number of sellers and low switching costs.

81. 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

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141 OFT (2004) Assessment of market power: Understanding competition law, para. 5.9
142 OFT (2004) Assessment of market power: Understanding competition law, para. 5.8
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 in the retail market for the trading of piped-gas to industrial customers. We present below the customer concentration for Sasol Gas in the national market.

81.1. Nationally, Sasol Gas’ top 5 customers account for only 21.4% and 25.6% of total sales by volume and revenue respectively. There are a further 000 customers that account for the remaining sales. This indicates that customers are small and may therefore not have any countervailing buyer power.

Table 4: Sasol Gas’ volume and revenue that is accounted for by its top five and remaining customers 2014

<table>
<thead>
<tr>
<th>National</th>
<th>Volume (GJ)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 5 customers</td>
<td></td>
<td>25.6%</td>
</tr>
<tr>
<td>Remaining customers</td>
<td></td>
<td>74.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Revenue (R)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 5 customers</td>
<td></td>
<td>21.4%</td>
</tr>
<tr>
<td>Remaining customers</td>
<td></td>
<td>78.6%</td>
</tr>
</tbody>
</table>

Number of remaining customers

Source: Genesis calculations based on information received from NERSA

4.2.4. Dynamic characteristics of the market

82. 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.152

83. The South African gas market may undergo significant changes in future that may stimulate the market leading to greater growth, entry and innovation. For example, the Department of Energy through the Independent Power Producer Office is drafting a Gas Utilisation Master Plan which will lay out the plan for the greater use of gas in the South African energy mix. In addition, the South African government has also released the Request for Information for the procurement of 3 126 MW of gas fired generation capacity.153 These and other developments such as the potential for 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. It will be important for NERSA to consider these and other changes that could impact on the level of competition in the relevant market/s.

153 Gas to Power Programme website, available at: https://www.ipp-gas.co.za/Home/About
4.2.5. **Vertical integration**

84. The degree of vertical integration may also affect the level of competition in the relevant market. Vertical integration occurs when a firm supplying a product in the upstream market combines with a firm that purchases the product in the downstream market. A supplier that has vertically integrated into the downstream market internalises the profit acquired by its downstream branch. Consequently, it will be less incentivised to provide lower priced or better quality products to competing downstream firms, as doing so would undermine its own profits in the downstream market. A dominant vertically integrated firm may engage in conduct aimed at foreclosing other downstream firms’ access to inputs or customers, reducing or preventing their ability to compete.¹⁵⁴

85. Furthermore, a high degree of vertical integration diminishes downstream firms’ countervailing buyer power. Threats by downstream firms to source from an alternative supplier will carry less weight, as the vertically integrated firm would still have a captive customer in the form of its downstream operations.

86. These effects will be more pronounced where the vertically integrated upstream firm has considerable market power and where the market is characterised by a small number of alternative upstream suppliers.¹⁵⁵

4.2.6. **Access to network infrastructure**

87. In network industries that comprise of both vertically integrated firms and non-integrated firms, the latter will require access to an established network in order to compete against the vertically integrated firm. Therefore, the ability of the vertically integrated firm to control its competitors’ access to essential network infrastructure may reduce the competitive constraint they are able to impose of the firm and therefore reduce competition in the market. An analysis of the nature of the contracts and agreements between the vertically integrated firm and its competitors will be important for assessing the extent of the competitive constraint the competing firms are able to impose. In competition law enforcement access to ‘essential facilities’ may be required, and a similar concept is often used in sector regulation, where it may be known as ‘third party access’ to certain facilities or infrastructure. The Competition Act defines ‘essential facilities’ as “an infrastructure or resource that cannot reasonably be duplicated, and without access to which competitors cannot reasonably provide goods or services to their consumers”¹⁵⁶ The third party access requirements as per the Gas Act specify a standard for third party access, which is limited to “access on commercially reasonable terms to uncommitted capacity in transmission pipelines”¹⁵⁷

4.3. **DETERMINATION OF THE ADEQUACY OF COMPETITION**

88. There is no formula or weighting that can be applied to the different factors to determine whether there is in fact inadequate competition. The results of all the factors need to be considered holistically and collectively to determine the adequacy of competition.

¹⁵⁶ Section 1 of the Competition Act No 89 of 1998, as amended
¹⁵⁷ The Gas Act (No.48 of 2001) s21(1)(p)
89. Some factors, such as the level of concentration, indicate whether the market is competitive or not. Other factors, such as barriers to entry, countervailing buyer power, and others, indicate why the market may or may not be competitive. These effectively explain why a high level of concentration or market shares might be observed.

90. One of the key indicators that there is inadequate competition in a market is the existence of a firm with a very large market share. This indicates that the firm is likely to have market power and behave independently of its competitors and customers. If this is coupled with other factors such as high barriers to entry and the firm having control of key infrastructure, then it is very likely that there will be inadequate competition in that market.

91. Based on the results of the analysis of the factors, a determination can be made whether there is inadequate competition in the relevant market/s at a given point in time.