GENERAL NOTICE

NOTICE 886 OF 2012

DEPARTMENT OF ENERGY

PETROLEUM PRODUCTS ACT, 1977

DISCUSSION DOCUMENT ON THE REVIEW OF THE MAXIMUM REFINERY GATE PRICE OF LIQUIFIED PETROLEUM GAS

The Minister of Energy intends to review the Maximum Refinery Gate Price of Liquefied Petroleum Gas under section 2(1)(c) of the Petroleum Products Act,1977(Act No.120 of 1977), and has approved the publication of the Discussion Document on the Review of the Maximum Refinery Gate Price of Liquefied Petroleum Gas in the Schedule for public comment.

All interested parties are hereby invited to comment in writing on the Discussion Document, to the Director-General by—

(a) Post to: Department of Energy
Private Bag X 96
Pretoria,
0001,

(b) Hand delivery to: Department of Energy
192 Visagie Street
Corner Paul Kruger and Visagie Street
Pretoria
0001; or

(c) Email to: .**muzi.mkhize@energy.gov.za** or **jabulani.ndlovu@energy.gov.za**

Comments must be submitted within 30 days of the date of publication of this notice.

Comments received after the closing date may not be considered.

SCHEDULE

DEPARTMENT OF ENERGY

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

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DRAFT REVISED MAXIMUM REFINERY GAS PRICE OF LIQUEFIED PETROLEUM GAS (LPG)

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Purpose of the document

This document outlines the Draft Maximum Refinery Gate Price of Liquefied Petroleum Gas ("Draft MRGP") which is primarily aimed at ensuring that liquefied petroleum gas (LPG) is properly priced and aligned to the strategic thrust of the Department of Energy (DoE) to ensure security of energy through diversification of energy resources with LPG being a significant part of the energy mix. The review is informed by the inadequacy of the existing MRGP to support the importation of LPG, in view of the very limited domestic production of LPG compared to the peak demand of LPG and Government's efforts to promote its use for thermal purposes.

Vision statement

To implement a well-considered and appropriate structure for the calculation of the MRGP in support of securing the supply of LPG and the utilisation thereof by ordinary South Africans.

Problem statement

The review of the existing MRGP is premised on the following issues:

- Government has embarked on a process of promoting the use of LPG as an efficient energy resource for space heating and cooking.
- In South Africa, LPG is only produced by the refineries (the four crude oil refineries and two synthetic fuel refineries) as a by-product. The low utilisation rates of these refineries coupled with the sheer low volumes of LPG produced, South Africa needs to import LPG to meet local demand, which peaks during the winter season. The import parity landed price of LPG is equivalent to the MRGP, which is regulated by the DoE. The outcry of the industry is that the current MRGP is inappropriate and will always be short of the actual landed price of LPG. Therefore, it is important that the MRGP be urgently made appropriate, in view of the fact that South Africa can only meet domestic LPG demand via imports at present.

Acronyms

BFP	Basic Fuel Price
CV	Calorific value
DoE	Department of Energy
FOB	Free on Board
LPG	Liquefied Petroleum Gas
LPGSASA	Liquefied Petroleum Gas Safety Association of South Africa
MJ/kg	Mega Joule per kilogram
MRGP	Maximum Refinery Gate Price of Liquefied Petroleum Gas
MW	Megawatt
NERSA	National Energy Regulator of South Africa
Saudi CP	Saudi Contract Price for LPG
TNPA	Transnet National Ports Authority
%	Percent

1. INTRODUCTION

LPG comprises a mixture of propane (chem. C_3H_8) and butane (chem. C_4H_{10}) with small concentrations of propylene (chem. C_3H_6) and butylenes (chem. C_4H_8). It is produced as a by-product of the refining process or extracted from oil or "wet" natural gas streams as they emerge from the ground. LPG is flammable and evaporates quickly at normal temperatures and pressures. It is liquefied by being pressurised and supplied in (steel) cylinders, which are typically filled to between 80% and 85% of their capacity to allow for thermal expansion of the contained liquid. The pressure at which LPG becomes liquid, called its vapour pressure, varies depending on its composition and temperature. Large amounts of LPG can be stored in bulk cylinders and can be buried underground.

LPG has a typical specific calorific value (CV) of 46.1 MJ/kg compared with 42.5 MJ/kg for fuel-oil and 43.5 MJ/kg for premium grade petrol (gasoline). It burns cleanly with no soot, thereby achieving some reduction in CO_2 emissions, very few sulphur emissions and poses no ground or water pollution hazards. However, since LPG is heavier than air, when leaked, it tends to flow along floors and settle in low spots, thereby posing an ignition or suffocation hazards. Enough technology has been developed to deal with the prevention and detection of leaks. Due to LPG's inflammable nature, issues pertaining to health and safety around the handling and use of LPG remain a serious concern. This is further exacerbated by the fact that an LPG accident is marked by an explosion, and this "bomb effect/impact" tends to create negative perceptions by the public on the safety of LPG.

Through the efforts of the Department of Energy and other stakeholders, particularly the LPG Safety Association of South Africa (LPGSASA), the public has warmed up to the use of LPG as an energy carrier of choice for cooking and space heating.

2. THE SOUTH AFRICAN LPG DEMAND AND SUPPLY SITUATION

The main components of LPG; namely; propane and butane; can be added into a refinery's petrol pool. However, the addition of these LPG components into petrol is practically limited by the volatility and vapour pressure specifications of petrol. That is, the LPG components constitute the light ends of petrol and tend to increase the volatility of petrol beyond the limit (which is higher in winter months compared to the summer months). On the other hand, the consumption of LPG depends on the prevailing weather conditions and peaks during the cold winter months when large quantities of LPG are consumed for thermal purposes (space heating and cooking). During winter, the demand for LPG far outstrips the available supply from local refineries.

It is unfortunate that the demand for LPG peaks in winter, when refiners can put more of its components into the petrol pool, and is at its lowest during the summer months, when it needs to be backed off the petrol pool. It is thus not surprising that South Africa has for the past six years experienced LPG supply shortages during winter. On the positive side, South Africa's winter corresponds with the summer in the northern hemisphere when the demand for gas for thermal purposes is reduced. This normally favours LPG imports that would have otherwise been destined for the northern hemisphere.

LPG supply regions that are relevant for the South African market during peak periods are North Africa and Middle East. A high proportion of LPG produced from these two regions is field grade (extracted from gas or oil streams) rather than from a crude refinery. In 2007, field grade LPG produced in North Africa and Middle East accounted for 84.4% and 81.5% of total production respectively. It can thus be concluded that any potential supply region relevant to the South African market will most probably be field grade LPG. The significant field grade LPG producers in the said regions are Sausi Arabia and Algeria. Globally, in 2007, Saudi Arabia was the second biggest producer of LPG at 21 million tons per annum (9.1% of global production) while Algeria was placed sixth at 9.3 million tons per annum (4.0% of global production).

Whilst the local production of LPG (by the refineries) remains constrained, demand for LPG is growing as more households diversify their energy mix in response to, amongst

1. Draft Revised Maximum Refinery Gate Price for Liquefied Petroleum Gas

others, the increasing electricity tariffs / prices. This increase in LPG demand, both now and in the foreseeable future, can only be achieved through imports. It is on this basis that the import parity principle needs to be applied in developing a pricing mechanism for LPG as it would cost one to buy it from a local coastal refinery, the so-called MRGP. For all intents and purposes, the MRGP is an LPG equivalent of the Basic Fuel Price (BFP) as applied for petrol and diesel.

3. THE LPG PRICE REGULATION IN SOUTH AFRICA

The current MRGP is based on the principle that the main constituents of LPG; namely; propane and butane can be utilised elsewhere in a crude refinery to produce more valuable petroleum products. Based on this principle, the price (or value) of LPG is derived from the 93 Octane Basic Fuel Price minus a R74 per metric ton discount. A detailed analysis of the merits or demerits of the alternative use valuation method for the MRGP determination is not the subject of this document.

On 14 July 2010, the Department of Energy started to regulate the maximum retail price of LPG supplied to residential customers in view of the unreasonably high prices that consumers were paying for LPG. The outcry by LPG consumers regarding the exorbitant prices they were paying for LPG was further compounded by the fact that they were taken advantaged of during times of LPG shortages. On the other hand suppliers that are permitted to import LPG into the country complained that the current MRGP calculation does not enable a sustained and financial viable importation of LPG to meet the increasing domestic demand. The Department of Energy undertook to allow the regulation of the maximum retail price to stabilise and then review the MRGP, which entails the foundation of the wholesale and retail prices of LPG.

The current MRGP and the price build-up to arrive at the maximum retail price of LPG supplied to residential customers are as outlined in Table 1 below.

1. Draft Revised Maximum Refinery Gate Price for Liquefied Petroleum Gas

Basic price of 93 octane for the fuel pricing period =		**R683.098 c/l**
Divided by density factor of 0.75	=	R9, 107.98 per metric ton
Less: discount factor	=	R74.00 per metric ton
LPG Refinery Gate Price of LPG	=	R9, 033.98 per metric ton
Conversion to "cents per litre" R9, 033.98x0.555/100 =		501.387705 c/l

Maximum Retail Price for LPG in Gauteng (Zone 9C) in cents per kilogram	
Price Elements	**Gauteng (Zone 9C)**
Maximum Refinery Gate price	903.398
Primary Transport costs	175.960
Operating Expenses	343.000
Working Capital	26.000
Depreciation	161.000
Gross margin: Cylinder – Filling plant	1,735.358
Sub-total (1)	260.304
Retail Margin [15% of sub-total (1)]	1995.662
Sub-total (2)	279.393
Value added tax [14% of sub-total (2)]	279.393
Maximum Retail Price (rounded to full cents)	**2,275.000**

Table 1: Illustration of the current MRGP and Maximum Retail Price of LPG

4. INTERNATIONAL LPG PRICING

The international market for LPG is dominated by Saudi Arabia. Not only is Saudi Arabia the largest producer in the region, but over fifty percent (50%) of world traded LPG is directly or indirectly priced relative to the Saudi Contract Price (Saudi CP) which the Saudis set each month. Production from Algeria is also priced relative to Saudi CP to ensure that their sales are competitive relative to LPG supply from Saudi Arabia.

The Saudi CP is considered the best benchmark because: it is the well-published and known to the market; it is highly representative of the market prices because of its prevalent use; it is responsive to changes in the LPG market, including being responsive to the spot market whilst being reflective of strategic and commercial factors at the discretion of Saudi Aramco; about eighty percent (80%) of the Asian LPG supply is priced relative to it; the price is generally accepted through negotiations between Saudi Aramco and buyers; issues pertaining to quality, quantity, location and timing are known and unambiguous; and the Saudi Contract Price is published just prior to the end of the month for liftings in the following month.

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5. LPG IMPORT FACILITIES FOR SOUTH AFRICA

Closely linked to the MRGP setting mechanism is the inadequacy of LPG import facilities in South Africa. It is argued that the current MRGP is not sufficient to compensate for infrastructural investments for the development of the required import facilities.

Afrox leases an import facility with a 3,500 ton working capacity in Richards Bay from Island View Storage. This facility is currently limited to about 200 tons per day throughput and investigations are currently underway to increase throughput by using rail. Easigas imports via facilities with a maximum holding capacity of 1,600 tons (2 spheres of 800 tons each) owned by Shell in Port Elizabeth. LPG can also be imported via the Durban port using import facilities with a maximum holding capacity of 1,000 tons (2 spheres of 500 tons each) owned by Sapref.

The LPG import facility owned by BP SA and located in East London is understood to be mothballed. The port of Saldanha Bay seems to be set to have import facilities of note. The National Energy Regulator of South Africa (NERSA) has awarded a licence for an import facility in Saldanha Bay but other matters still need to be resolved with Transnet National Ports Authority (TNPA) for progress on this matter. The current "ship-to-road transport" operation at Saldanha Bay operation is sometimes used as an interim measure, noting the safety and operational concerns attached therewith.

6. PROPOSED REVISED MRGP SETTING MECHANISM FOR SOUTH AFRICA

It is proposed that South Africa adopts an MRGP setting mechanism based on the international price of LPG deemed to be sourced from Saudi Arabia. The Saudi CP price is then deemed as the input Free on Board (FOB) price of LPG. The elements of the MRGP are as briefly outlined below and the details thereof are contained in **Annexure A**.

6.1 Elements of the MRGP based on the international price of LPG

Below are the elements of the proposed revised MRGP briefly outlined:

1. In all likelihood, the Free on Board price for LPG destined for South Africa will be directly priced relative to Saudi CP.
2. Typical insurance cost for shipping LPG cargoes is currently at US$1 per metric ton.
3. While there are no losses in transit, during offloading at the discharge port there are typical terminal losses and these generally equate to about US$2 per metric ton.
4. Currently South Africa is constrained on LPG storage facilities with limited import / receiving terminals. This storage constraint limits the cargo size any importer can commercial ship into South Africa. Currently, LPG parcels ranging from 2,000 – 3500 metric tons are imported into South Africa during peak demand season. The freight cost from Saudi Arabia to Richards Bay in February 2012 was US$295 per metric ton.
5. All imports into South Africa are 'cleared' by third party service providers and this normally costs R 2,000.00 per 3500 metric ton cargo.
6. National Ports Authority (TNPA) charges in 2012 for petroleum products are R52 per metric ton.
7. Product testing costs at load port could amount to US$1,000 per cargo and ZAR 20,000.00 per cargo at discharge port. Load port costs are generally shared 50:50 with suppliers.
8. Coastal storage can be leased commercially at R350.00 per metric ton.
9. The working capital charge will be at prime less 2%. It could be argued however that the net working capital days will be shorter because suppliers of products are paid five days after discharge or thirty days from Bill of Lading date (date the vessel finishes loading at load port) but no later than 45 days.

6.2 Regulatory Framework

An option for the revised MRGP to only apply to incremental volumes of LPG imported into South Africa (i.e. LPG demand that is over and above domestic production) was considered. It was however rejected on the grounds of regulatory complexity and the need to have an equitable system that is uniformly applied taking due cognisance of the security of supply challenges.

The option of applying the revised MRGP to all LPG supplied in the country was considered and adopted as a firm proposal to present to stakeholders for consultation thereon. However, a "correction" factor in consideration of the local production of LPG will be discussed with stakeholders.