

Submission to NERSA
Comments on the MYPD 3 Application

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1 Executive Summary

Eskom has submitted its proposals for pricing in the MYPD3 and NERSA has called for public submissions and comments. This report is made in response to that call. It follows two earlier reports submitted in respect of the MYPD 1 and 2 (Altman et al 2008 and 2011). The report is organised as follows: first background to the MYPD3 is offered. Second, comments and recommendations are outlined reviewing the price path, municipal pricing, Eskom viability and potential impact on employment and the economy.

It makes good sense to determine a long term price path. Eskom's MYPD3 submission proposes a five year determination. This would give more certainty. However, there is more generally uncertainty about what the target electricity price should be. Eskom itself seems to have shifted its goals in its submissions since 2008. The initial proposals for a 100% increase above the 14.2% given in 2008 had been understood as getting the price to where it needed to be in one shock move, and subsequent small above inflation increases thereafter. However, each application brings further shock increases. Certainty is needed for both consumers, for Eskom, and for investors in Eskom and IPPs. At the same time, rising energy prices should not unnecessarily squeeze the economy. Agriculture, mining and manufacturing in SA are energy intensive, and even with improved energy efficiency, no industry can bear continuous shock price increases over a short period of time. These price increases can encourage efficiency improvements and innovation, but in a slow economic environment will more likely dissuade investment and expansion. What is clear is that the current process is not giving certainty to the market, as was intended.

There are still too many uncertainties in respect of who is responsible for the build programme going forward as well as a proposed market structure. This type of uncertainty led to the first energy crisis, and it is imperative that these roles be clarified.

The price path

The medium and long term price of electricity – both the target and the path – need to be determined. The current process of multi-year determinations was meant to offer more certainty. The goal posts keep moving, even over this short period of time since 2008. This longer term path needs to be set within a broader agenda where clarity was offered on the mix of energy and who would invest, market structure, and an appropriate pricing model that serves both the electricity company and the economy and consumers.

Yet a decision needs to be taken now. Eskom has proposed a five year determination. It is suggested that this proposal be supported. A nominal annual increase of 10% to 12% would get Eskom to the price it had hoped to achieve in its MYPD 2 application, albeit along a more smoothed path.

Municipal pricing

About half of all energy is purchased through municipalities. The price charged there is well above that set for Eskom, which is understood to be a result of higher distribution costs. But the price increases have also risen faster than Eskom's. NERSA has issued guidelines to municipalities on norms for electricity pricing. Half the municipalities reviewed charged 150% more than the Eskom rate, and raised their tariffs by about 100% more than that proposed by NERSA (in our review of small business pricing).

It is unclear whether municipalities are applying the guidelines in respect of free basic electricity or on pricing. Our rapid review in 2010 showed that many were not, and that prices charged for households consuming between 51 – 150KWh/month were excessive.

The guidelines provided by NERSA need to be enforced, with an eye to both the current prices charged and rate of tariff increases.

NERSA began gathering information on municipal pricing in 2010, and should do the same for the provision of free basic electricity. This is long overdue and the regulator should be encouraged to do this survey annually.

Eskom viability

Eskom targets financial ratios suitable for a public listed company, partly as a result of regulatory rules. Perhaps electricity prices need to move to cost-reflective tariffs, including consideration to building reserves for future investment. The challenge is that the proposed increases over a short period of time may well be damaging to the economy. In a context of monopoly supply and guaranteed demand, certainty can be offered with long term commitments to price increases. As it is, Eskom's proposals made in the IRP2010 and MYPD2 enable Eskom to achieve targets for interest cover, profitability and debt:equity ratios rapidly – so that it might well be possible to reduce the price in real terms after 2016. Given the potential impact on the economy, some approach should be found to smooth price increases over a longer period, and not with the rapidity proposed in the MYPD3 proposals. It does not appear that Eskom's medium or long term viability would be damaged in this way.

While we did not revise the WSP/HSRC financial model of Eskom for the MYPD 3 review, many of the assumptions proposed by Eskom were already built into our projections. NERSA is welcome to work with this model in its assessment of Eskom's proposal.

Genesis' submission to the MYPD3 queries cost assumptions and proposes that R138 billion could be saved. This may be an overstatement of potential savings. Yet the work is sufficiently detailed as to require a full response from Eskom as part of the MYPD3 process.



Employment and economic viability

Electricity impacts on employment and growth in a number of ways. First and foremost is security of power supply, which when constrained can act as a physical barrier to investment and operations. Security of supply will be in part reliant on new investment but also on improved energy efficiency. Second, a clear and reasonable price path will be essential. If increased too fast, firms may simply cut back on production. If the target and path for price increases is clear, it could give time for adjustment.

Given the slow pace of signing up IPPs, cogeneration and imports, it seems likely that electricity supply will be constrained at least until 2017. It is urgent that these processes be implemented more rapidly. Energy efficiency measures and rationing are two approaches to addressing shortfalls. Energy efficiency will stimulate the economy and promote employment, while rationing can cap growth rates below potential. In the SA context of high unemployment and slow economic growth it is urgent that the emphasis be on expanding supply and improving efficiencies.

Our initial modelling in 2008 and 2010 showed limited impacts on growth arising from the proposed increases. A once-off increase of 35% would lead to GDP being -0.1% less than otherwise, but the producer price index would rise by 1.3% more than otherwise. However, this looked at the impact of once-off increases. The MYPD3 proposals could lead to the real price increasing by 3 to 4 times over the decade from 2008-2018. There are ten sectors that will be substantially affected including chemicals, non-ferrous metals, general hardware, textiles, tyres, gold mining and accommodation. In these sectors, electricity accounted for more than 4% of total costs. In the absence of energy efficiency improvements, electricity might account for more than 11% of costs by 2018, substantially eating into profitability and competitiveness.

The impact of electricity price increases on poor households is often framed in terms of direct burden on low income households. Our review of municipal pricing shows that indeed this is a concern. Yet this is only one half of the challenge. The other half relates to employment creation, and price increases created indirectly where the price of goods normally bought by poor households rise disproportionately as firms pass on their electricity price increases.

Energy efficiency will be a central approach to mitigating the impacts of rising electricity pricing. However, there are no official and reliable statistics to support this monitoring. Either StatsSA, NERSA, the DoE or a statutory agency should step in to ensure that reliable data is collected and monitored. This will enable policy makers to see whether their interventions are indeed promoting economy wide energy efficiency improvements.

2 Background

Eskom has submitted its proposals for pricing in the MYPD3 and NERSA has called for public submissions and comments. This report is made in response to that call. It follows two earlier reports submitted in respect of the MYPD 1 and 2 (Altman et al 2008 and 2011). The report is organised as follows: first background to the MYPD3 is offered. Second, comments and recommendations are outlined reviewing the price path, municipal pricing, Eskom viability and potential impact on employment and the economy.

Electricity has historically been cheap in South Africa and, until recent times, plentiful. Industries that are energy-intensive such as smelters have been encouraged, and there has been little incentive for energy efficiency. Rolling blackouts in 2008 brought the true state of electricity supply to public attention, with serious implications for the economy arising just at the onset of the global economic crisis. Most seriously affected were firms supplied directly by Eskom, especially the smelters and the mines.

The real electricity price fell from 1983 to 2002, as shown in Figure 1. The real electricity price in 2008 matched that of 1995. This is the context in which Eskom was unable to build up sufficient reserves to cover the costs of maintenance, replacement or new capacity. Limited reserves were partly caused by indecision in respect of who would build new capacity –whether it would be Eskom or other private investors. The price has increased substantially since 2008, reaching R0.34/KWh which was the last peak price of 1978, and R0.45/KWh currently (all compared in 2008 Rand). There is much debate about whether SA still has low or high priced electricity by global standards. Table 2 compares global electricity prices in 49 countries (generally in 2011 and 2012), where SA ranks between 15th and 24th. If the real price increased by 50% (and other countries stayed the same), it would take SA to position 20th to 37th. The relative price matters in respect of attracting global investment. Yet, what matters more is the pace of change, a reflection that our economy relies heavily on metals and minerals (with energy being a key price affecting competitiveness), and having certainty of a path. It is understandable that the electricity price needs to move to reflecting full cost but also that these seemingly ongoing proposals for multiples-of-inflation type increases cause consternation.

In 2008, the Human Sciences Research Council (HSRC) prepared independent recommendations on an appropriate price path for electricity charged by Eskom, keeping in mind the needs of both the economy and Eskom itself. The context was one of electricity shortages, mostly caused by underinvestment and poor management of coal stocks. It became clearer to the public and policy makers that some critical decisions were needed to overcome these challenges. This included decisions required by the National Energy Regulator of South Africa (NERSA) on the electricity price. The Presidency and the National Electricity Response Team (NERT) required support to form a view on an appropriate approach to raising the price to cover costs. This was regarded as an important contribution by an institute that does not have a vested interest in the outcome.

Since then circumstances have changed, especially with the global economic slowdown. In addition, new information is continuously coming to light in a context that has, until recently, been characterised by very limited knowledge-sharing. Further, it appears that South Africa's 'electricity crisis' will not go away soon. In 2008, when the electricity shortages came to light, there were deep concerns about the effect on potential economic growth. There was a respite as the pressure on electricity supply



waned due to the global economic recession in 2009 and 2010. From a peak of 21 780GWh in July 2007, electricity consumption fell dramatically to a low point of 18 668GWh, but recovered to 21 316GWh by July 2010 (Stats SA 2009–2010).

There have been questions about the approach to expanding energy supply, rationing electricity and pricing electricity. The HSRC study in 2008 recommended that electricity not be rationed, but instead that the price should increase over time in a way that sets expectations and therefore encourages firms and households to improve efficiency. The policy approach has included the announcement and implementation of a known price path over three-year periods (although not always implemented as announced by municipalities), ‘carrots’ (incentives for improved efficiency), and ‘sticks’ (disincentives such as the Power Conservation Programme). Industry rationing is part of the policy mix, requiring a trade-off between existing operations, expansions and new investments: this is implemented by Eskom directly in relation to its largest customers, but also informally where municipalities delay investment approvals for lack of energy available. There has been some uncertainty in relation to the approach to achieving energy supply targets as proposed in the Department of Energy (DoE)’s draft Integrated Resource Plan (IRP2010) especially in respect of the energy mix, approach and movement on co-generation and IPPs, Eskom’s own investment plans, and plans for market structure.

In 2010/11, the HSRC updated its work to take into account new circumstances and improved knowledge to make it more accurate(Altman et al 2011). This report was aimed at responding to the MYPD3 proposals, with an eye to how the chosen price path might affect the economy, employment and incomes since 2008. It has taken some time to implement policies to plan electricity generation, enable firms to adjust, implement conservation schemes amongst others.

We updated our financial model to build a view to 2030 in order to consider the likely impact of electricity pricing on Eskom’s sustainability going forward. In this we reflected on Eskom’s MYPD2 proposals, and this is summarised in the present commentary below.

We also explored the extent to which firms implemented efficiency improvements since the electricity crisis, and their plans going forward. We wanted to find out which policy elements have most impact on behaviour. We understand that the IDC is preparing a more intensive and up-to-date study on this matter in the first half of 2013. In terms of economic impact, improving energy efficiency could have a major impact on promoting productivity and employment growth, even if there were no supply shortages. However, in the context of the shortages, the faster firms adapt and improve energy efficiency, the less the impact shortages will have on price levels, output and employment. There is a real concern that rising electricity prices will encourage firms to instead shut down production or contain expansion, with associated downstream impacts on economic growth and employment. In addition, industry informants say they are currently rationed in a number of ways. The implications for employment outcomes need regular assessment.

A critical component of this analysis is to explore the potential impact on poor households. In this, we reflected on the distributional impact of policy choices in respect of electricity. Often this is understood to mean the direct impact of rising electricity prices paid by the poor. Yet this is only one half of the challenge. The other half relates to employment creation, and price increases created indirectly where the price of goods normally bought by poor households rise disproportionately as firms pass on their electricity price increases.

There is an immediate need to make pricing decisions, in a still uncertain context. This poses great challenges for NERSA, Eskom and the economy. The present submission is focused on specific insights and recommendations, and does not represent a revision of the earlier 2 studies. We believe that many of the same issues raised in those studies still stand as relevant today.

3 Comments and Recommendations

3.1 The price path

Since the 2008 ‘load shedding’ or rolling blackouts, companies and the general population experienced the reality of electricity shortages for the first time. Simultaneously, pricing reviews by the regulator, NERSA, were being undertaken to meet its regulatory requirements, and Eskom was submitting requests for very large price increases. Then there had been added concerns raised about the quality of Eskom’s management, many of which have been resolved since then. This combination has generated considerable heat, further ignited by each price increase request submitted by Eskom and the proceedings of NERSA’s public hearings on the application.

In 2008, subsequent to a ruling by NERSA for a 14.2% electricity price increase, Eskom made a further submission seeking a 100% real price increase over the course of 2008/9 and 2009/10, and then for the price to rise ‘marginally above inflation’ thereafter. This would have taken the real target price to R0.42 per KWh by 2010 and about R0.49 per KWh by 2018. At that time, NERSA instead ruled that a further 13.3% would be implemented, resulting in an annual price increase of 27.5% (or a compounded 29.4% for the year. It further noted that the price should be expected to rise by 20% to 25% annually over the subsequent three years. There was a further submission by Eskom in 2009 seeking a price increase of 45% per annum for three year (although it later reduced this request to 35% per annum). This would have taken the real price to R0.48 per KWh by 2012 and about R0.68/kWh by 2018 (in 2008 Rand). NERSA ruled that the MYPD2, the second Multi-Year Price Determination, which is meant to lay the three-year path for the electricity price, permitted the electricity price to rise by 24.8%, 25.1% and 25.9% (then reduced to 16%) in each successive year starting in 2010. This would have taken the real price to R0.50 per kWh by March 2018 in 2008 Rand. The MYPD 3 proposals ask for an average annual price increase of 16% per annum, or 20% if Eskom is meant to continue building further plant beyond its current plans. The average 16% increase would raise the real price to R0.73/KWh by 2018 (in 2008 Rand). If the alternative path proposed by Eskom were approved, where the average increase is 20% per annum to cover the costs of additional investments, the real price would rise to R0.87/KWh. Table 1 below shows possible target prices in 2018, based on these different paths, and assumes that once increases approved come into play, the price increases in subsequent years are 2% above inflation.

By way of comparison, the nominal price in 2008/9 was R0.19/KWh and by the end of 2012/13 it will be R0.59/KWh (or R0.45/KWh in 2008 Rand).



Table 1: Real price of electricity price in 2018 under different price paths

Year ending	Price path	Price in march 2018 (R/KWh, Nominal)	Real target price Mar 18 (R/KWh, in 2008 Rand)	% real increase (2008-2018)
MYPD 1 Eskom proposal (2008)	14.2%+100%, then slightly above inflation	0.87	0.49	156.6%
MYPD 2 Eskom proposal (2010)	(29%+31.3%)+35%+35%+35%, then slightly above inflation	1.16	0.68	260.1%
NERSA ruling	(29%+31.3%)+24.8%+25.8%+25.9%(reduced to 16%), then slightly above inflation	0.93 (0.86)	0.54 (0.50)	162.0%
MYPD 3 Eskom proposal (2012)	(29%+31.3%+24.8%+25.8%+16%)+16% \times 5 years, then slightly above inflation (29%+31.3%+24.8%+25.8%+16%)+20% \times 5 years, then slightly above inflation	1.23 1.46	0.73 0.87	282.2% 356.9%

*Note: amounts in brackets have already been implemented
We assume slightly above inflation means 2% above*

What is the vision for the price path and target price? Eskom's submissions imply that its assessment of a target price shifted from R87/KWh, then R1.16, and now R1.23 by 2018 (or R0.49, R0.68 and R0.73/KWh in 2008 Rand).

Eskom's stated objective is to cover the cost of its expansion programme; rising primary energy costs – coal and liquid fuel in particular; demand side management; procurement from independent power producers and power conservation programmes; and the need to ensure its financial sustainability and give confidence to lenders and investors.

The reality is that major investments are needed to ensure secure electricity supply, both for necessary maintenance and for new generating capacity. Current policy sees Eskom as the main supplier of that capacity. Generally, when companies engage in major new investments, they rely substantially on a shareholder injection and on financial reserves built up over time. Yet, reserves were not built up due to the electricity price being kept artificially low for many years as part of South Africa's industrial policy. Now the fiscus is strained in the context of a slow economy.

Given the history, there appear to be legitimate reasons for fairly large price increases that are more reflective of the actual cost of producing, transmitting and distributing electricity. However, there are also very serious objections to such an approach. First, Eskom is a monopoly, with no competition to push it to a technological or efficiency frontier. Nor is there sufficient independent analysis to effectively challenge Eskom assertions of its actual costs. Could efficiency improvements reduce costs dramatically, thereby diminishing pressure on the consumer? Nobody outside of Eskom can say for sure. Nor do we definitely know whether Eskom pays sufficient attention to reducing its costs and improving its efficiency. Second, about 10% of Eskom's supply goes to exports and directly to large companies, especially in mining and smelting. These pricing arrangements are not regulated and the agreements are confidential. We do not know to what extent ordinary people might be subsidising these users. Third,

there was very limited debate until recently about the future of energy in South Africa in respect of sources and technologies. The availability of information has improved markedly since 2009, and yet there are still important gaps. Examples include categories like “other opex” which has risen by 20-30% in this application over the last one, understanding why the cost of future investments past Kusile would require such large price increases now, technology and sourcing choices for future energy and insights into range of important investment decisions that have already been locked in. Fourth, there could be an alternative mix of public and private provision which could reduce pressure on Eskom. Fifth, it is understood that the price should move to one that is cost-reflective, and that ensures security and stability in supply. Yet what explains the the financial ratios that are targeted by the regulator and Eskom, and the apparent urgency to amortise investments?

The medium and long term price of electricity – both the target and the path – need to be determined. The current process of multi-year determinations was meant to offer more certainty. The goal posts keep moving, even over this short period of time since 2008. This longer term agenda needs to be set within a broader agenda where clarity was offered on the mix of energy and who would invest, market structure, and an appropriate pricing model that serves both the electricity company and the economy and consumers.

Yet a decision needs to be taken now. Eskom has proposed a five year determination. It is suggested that this proposal be supported.

A nominal annual increase of 10% to 12% would get Eskom to the price it had hoped to achieve in its MYPD 2 application, albeit along a more smoothed path



Figure 1: Average Eskom prices (c/kWh), 1950–2008



Source: www.nersa.org.za

Table 2 - Global electricity price comparison

Country/ Territory	US cents /kWh	As of
Iran	2 to 19	July 1, 2011
Ukraine	3.05 to 3.95	2011
Russia	1.7 to 9.58	January 1, 2012
Bhutan	1.88 to 4.40	March 23, 2012
Thailand	4.46 to 9.79	March 5, 2011
Uzbekistan	4.95	2011
Argentina	5.74*	2006
Vietnam	6.20 to 10.01	2011
Canada	6.3 to 11.8	November 1, 2012
Taiwan	7 to 17	June 1, 2012
Jamaica	7.35 to 16.80	June 1, 2011
Malaysia	7.42	December 1, 2007
China	7.5 to 10.7	May 17, 2012
Dubai	7.62	2011
South Africa	8 to 16	November 5, 2012
United States	8 to 17 ; 37***	September 1, 2012
Iceland	9 to 10	June 1, 2012
Perú	10.44	2007
Moldova	11.11	April 1, 2011
(HK Is.)	12.04	January 1, 2012
Turkey	13.1	July 1, 2011
Uruguay	14.47 to 22.89	February 18, 2011
Israel	15*	January 1, 2012
Bulgaria	16.33	July 1, 2012
Croatia	17.55	July 1, 2008
United Kingdom	17.85	September 1, 2012
Latvia	18.25	June 1, 2012
New Zealand	19.15	April 19, 2012
Mexico	19.28**	August 22, 2012
France	19.39	November 1, 2011
Pakistan	2.00 to 15.070	May 16, 2012
Finland	20.65	November 1, 2011



Australia	22 to 46.56	August 23, 2012
Singapore	22.24	July 4, 2012
Spain	22.73	July 1, 2012
Chile	23.11	January 1, 2011
Hungary	23.44	November 1, 2011
Portugal	25.25	November 1, 2011
Guyana	26.80	April 1, 2012
Sweden	27.10	November 1, 2011
Ireland	28.36	November 1, 2011
Italy	28.39	November 1, 2011
Netherlands	28.89	November 1, 2011
Belgium	29.06	November 1, 2011
Philippines	30.46	March 1, 2010
Germany	31.41	May 31, 2012
Brazil	34.18	January 1, 2011
Denmark	40.38	November 1, 2011
Tonga	57.95	June 1, 2011

3.2 Municipal pricing

Currently there are three main ways of distributing electricity: via Eskom, via municipalities and where firms generate and supply their own power. From the consumers' perspective, the main concerns in respect to electricity are its price and the quantity and reliability of its supply.

The smelters have separate agreements that are not regulated, and so they are not affected by the NERSA decision. Some industries are supplied directly by Eskom, and they will pay the full increase. Other industries are supplied by municipalities. The level of tariff increase applied by municipalities and electricity distribution entities is subject to the control of, and review by, NERSA.

In 2008/9, Eskom was awarded an increase of 19%, and we are not aware of municipal guideline issued at that time. The combination of guidelines from National Treasury and Nersa would lead municipalities to raise their electricity rates by 25% to 34% in 2009/10, and then by 22% and 19% respectively in 2010/11.¹

¹ National Treasury issued an Annexure to MFMA Circular No.48 providing updated information to municipalities for the preparation of their 2009/10 budgets. As a NERSA guideline had not been issued, Treasury advised that municipalities should budget for a 34 per cent nominal and 25 per cent real increase in bulk electricity tariffs. The unintended consequence was that municipalities implemented either rate. Based on this circular, NERSA approved two sets of municipal tariff guideline and benchmarks for the 2010/11 financial year (i.e. 19% and 22%). The 19% guideline and benchmarks referred to those municipalities that implemented 34% in 2009/10. The 22% guideline and benchmarks referred to those municipalities that implemented 25% in 2009/10 (see NERSA 2010c).

In its 2010 MYPD2 ruling, NERSA provided guidelines on acceptable tariff revision for municipalities, namely that municipalities were allowed to increase their electricity prices by only 15% to 16% each year.

NERSA surveyed municipal prices and this review process showed that many municipalities raised the electricity price well beyond this ruling. We drew a sample of 25 municipalities and found that their electricity tariffs for small firms rose by 39% to 90% over the period from October 2008 to November 2010. Based on Treasury and NERSA guidelines, it would be expected that municipal electricity rates should have increased by 49% to 59% over this period. Twelve (12) of these municipalities raised their small business tariff by 60% to 90% over this period.

The starting price in municipalities is already considerably more than that charged directly by Eskom. While industries supplied directly by Eskom face a higher increase, they paid about half the price as compared to municipal-supplied businesses – an average of about 42c per kilowatt hour versus about 91c to 96c per kilowatt hour. For most industries, this should not have had a major impact on costs, although it would hopefully spur energy-saving behaviour. However, the energy-intensive industries were hit hard and require adjustment support.

Half of the municipalities reviewed charged more than 150% of the Eskom rate. For example, in November 2010, Eskom charged 49c per kWh to small businesses, whereas Cape Town, Johannesburg (City Power), and Ethekweni respectively charged 77c, 88c, and 84 c per kWh. Perhaps reflecting the character of its energy intensive business in Ekurhuleni, the rate was lower than many of the others at 63c per kWh. The EIUG prepared a more recent review of municipal pricing and found similar results.

It is essential that NERSA monitor municipal pricing annually, and enforce its guidelines. The municipalities rely quite heavily on cross-subsidies from electricity revenue. However, these municipal increases may have the impact of slowing investment and employment growth, especially in weaker regions.

Table 3: Sample of typical small business commercial tariffs

Municipality	Notes	Tariff on energy use only (R/kWh)		% tariff increase – Sept 2008 to Nov 2010	
		Sep-08	Nov-10	Tariff increase on Energy Usage only	Tariff increase including all additional fixed and service charges
City of Cape Town	Small power users (>1000kWh/month)	0.4855	0.7766	160%	61%
Ethekweni	Business & general	0.5227	0.8429	61%	60%
City Power (Johannesburg)	Business	0.5029	0.8791	75%	71%
Ekurhuleni	Tariff B (commercial)	0.4030	0.6340	57%	64%
Eskom	Business rate 2	0.3363	0.4942	47%	61%
Tshwane	Non-domestic three phase: conventional	0.4340	0.6900	59%	59%



Municipality	Notes	Tariff on energy use only (R/kWh)		% tariff increase – Sept 2008 to Nov 2010	
		Sep-08	Nov-10	Tariff increase on Energy Usage only	Tariff increase including all additional fixed and service charges
Buffalo City	Small power user scale 2	0.5461	0.8748	60%	60%
Emfuleni	Business tariff	0.4967	0.7921	59%	59%
Bela-Bela	General consumer three phase	0.3400	0.6474	90%	91%
Elias Motswaledi	Commercial	0.4380	0.6950	59%	57%
Khara Hais	Business	0.4463	0.7541	69%	69%
Nelson Mandela Bay	Small business	0.5479	0.8356	53%	53%
Setsotho	Business	0.3900	0.6100	56%	56%
Umtshezi	Business three phase	0.3400	0.4710	39%	48%
Tzaneen	Tariff B three phase	0.3115	0.5571	79%	72%
Steve Tshwete	Business three phase	0.2733	0.4168	53%	32%
Oudtshoorn	Business	0.3859	0.5900	53%	50%
Mosselbaai	Scale 2 three phase	0.3440	0.5200	51%	51%
Matzikama	Commercial three phase	0.5000	0.8700	74%	74%
Langeberg	Small users three phase	0.4300	0.6210	44%	44%
Knysna	Business three phase	0.4240	0.7600	79%	54%
King Sabatha Dalindyebo	Commercial	0.4690	0.8800	88%	86%
Moghaka	Business rate urban <50kVa; <8000kWh	0.5406	0.8600	59%	59%
Metsimaholo	Business	0.4740	0.7965	68%	67%
Manguang	Tariff II – business rate declining block	0.3965	0.7100	79%	63%
Mogale City	Small commercial	0.471	0.7379	57%	57%

Source: NERSA website – www.nersa.org.za

In terms of pricing and services for the poorest households, there has been some

NERSA has issued guidelines to municipalities on norms for electricity pricing. Half the municipalities reviewed charged 150% more than the Eskom rate, and raised their tariffs by about 100% more than that proposed by NERSA (in our review of small business pricing). This affects about half of all consumers of electricity.

It is unclear whether municipalities are applying the guidelines in respect of free basic electricity or on pricing. Our rapid review in 2010 showed that many were not, and that prices charged for households consuming between 51 – 150KWh/month were excessive.

The guidelines provided by NERSA need to be enforced, with an eye to both the current prices charged and rate of tariff increases.

NERSA began gathering information on municipal pricing in 2010, and should do the same for the provision of free basic electricity. This is long overdue and the regulator should be encouraged to do this survey annually.

debate about whether municipalities are applying guidelines in respect of free basic electricity or on pricing. We called a sample of 44 municipalities and found only 10 providing free basic electricity. We also scanned tariffs for low-income consumers in these same municipalities (with information provided by NERSA). The tariffs for those consuming less than 50kWh per month varied between 41c/kWh and 91c/kWh, but mostly fell into the range of about 60c to 75c. The tariffs for those consuming 51kWh to 150kWh/month ranged from 42c to 92c/kWh, although mostly they charged between 65c and 85c.

3.3 Price increases and Eskom viability

The WSP Energy Group Africa/ Human Sciences Research Council (WSP/HSRC) model of Eskom's financial status under different scenarios was established in 2008, and updated in 2010 to take account of changing economic environment, policy changes, and to extend it to 2030. This model is meant to enable policy makers and the regulator to independently assess the possible impact of electricity pricing on Eskom. It encourages the user to get to grips with the different feed-in assumptions.

The model was not updated for the purpose of this submission, but could be in partnership with NERSA. In each of the other rounds, we investigated Eskom's request in detail, responding to many aspects of the submission. Having said that, a long term vision is needed for electricity pricing that mainly varies according to factors outside of ones control, such as the exchange rate or the global price of primary energy. Therefore an understanding of Eskom's finances should not alter substantially after two years. We therefore report on our findings from 2010/11. More detail is offered in our 2011 Report (Altman et al 2011).

The Integrated Resource Plan (IRP2010) base assumptions are used, such as plant costs, operating costs, load factors, etc. The research team engaged with Eskom and an expert roundtable was held in October 2010 in respect of assumptions on the inputs to the model. In addition, the model now offers: an industry-wide financial model of Eskom and IPPs to show viability of different options/paths; a long-run margin cost comparison; extensive user input fields for scenario planning; and result outputs that are easy for many stakeholders to relate to. The test of the model was the closeness to the IRP2010 outcome on pricing, which we found to be strong.

Two scenarios were produced, which compare the IRP2010 balanced scenario with the introduction of some 4 500MW of independent wind generation, and a pricing progression of five increases each of 25% from 2010 and inflation in subsequent years. The alternative scenario adds an extra 700MW of wind as early as can be achieved to alleviate short-term power shortages. We also assume there is an extra co-generation of 1 460MW via a COFIT [Co-generation Feed-In Tariff] programme based on pricing equal to the long-run marginal cost for new coal. Finally, we assume the earlier retirement of one coal unit.

Eskom targets financial ratios appropriate for a public listed company, and it is worth asking if these are the suitable ones for a state-owned monopoly with certainty of demand. Nevertheless, the focus of our results is on whether the proposed price increases would enable Eskom to achieve stated targets of profitability, interest cover and debt:equity ratios. Eskom is targeting an interest cover of 3.0 and debt:equity ratios below 200%.



The IRP2010 scenario has the real compound price of electricity rising by 265% between 2008 and 2019. The unit price increases to R1.20 by 2019 (or approximately the price targeted by Eskom in its MYPD3 proposals). Interest-bearing debt peaks in 2014 at R275 billion and falls to R90 billion by 2020. The WSP/HSRC modelling in 2010 proposed that this price increase would result in losses after tax and interest until 2012, whereafter net profit rises to R82 billion by 2020. Interest cover rises to 2.0 by 2013 and reaches 5.5 by 2018. The debt:equity ratio falls to below 200% by 2014, and to extremely low levels thereafter. It would appear that these price increases very quickly return Eskom to its required ratios within a very short space of time. A judgement is needed in respect of whether this pace of recovery warrants the very large annual price increases being introduced. If so, it does certainly seem that the price could be reduced in real terms from 2016.

In the alternative scenario, interest-bearing debt peaks in 2014 at R270 billion, and falls to R215 billion by 2018. Profit after tax and interest is negative in 2012, but rises above R10 billion in every subsequent year, reaching R51 billion in 2018. Interest cover is above 2.0 in most years and reaches 3.0 by 2016. The debt:equity ratio falls below 200 by 2014, and to extremely low levels quite quickly.

In an analysis of the MYPD3 application, Genesis Analytics (2012) propose that Eskom overstates costs or underestimates costs savings. In total they suggest that R138 billion could be saved over the five year period. To the extent that this is correct, it would go a long way towards identifying a path to lower electricity price increases. Genesis offers sufficient detail for NERSA to require a response from Eskom. Is the problem that Eskom may be overstating potential costs to motivate for higher-than-needed price increases. Or is it a matter of concern that Eskom may not be operating efficiently? If it is the latter, a 10% saving on costs (as opposed to the R30bn proposed or 1/5th of that proposed by Eskom) may be a stretch over a short period of time. We have not interrogated Genesis' proposals in detail. However a quick review might suggest that the report raises important locations for savings, yet it

Eskom targets financial ratios suitable for a public listed company, partly as a result of regulatory rules. Perhaps electricity prices need to move to cost-reflective tariffs, including consideration to building reserves for future investment. The challenge is that the proposed increases over a short period of time may well be damaging to the economy. In a context of monopoly supply and guaranteed demand, certainty can be offered with long term commitments to price increases. As it is, Eskom's proposals made in the IRP2010 and MYPD2 enable Eskom to achieve targets for interest cover, profitability and debt:equity ratios rapidly – so that it might well be possible to reduce the price in real terms after 2016. Given the potential impact on the economy, some approach should be found to smooth price increases over a longer period, and not with the rapidity proposed in the MYPD3 proposals. It does not appear that Eskom's medium or long term viability would be damaged in this way.

While we did not revise the WSP/HSRC financial model of Eskom for the MYPD 3 review, many of the assumptions proposed by Eskom were already built into our projections. NERSA is welcome to work with this model in its assessment of Eskom's proposal.

may overstate the potential. The category of “other” operating expenses is the most opaque of all. Genesis proposes that R37billion could be saved over the MYPD3 (off a proposed expenditure of R 75 billion). In our model, we assess that Eskom's ‘other’ expenses would have been R12 billion lower in its last application than what it proposes for the MYPD3. At the least, Eskom needs to explain why “other” costs are R12 billion higher in their current application. In a second example, Genesis suggests a saving of R3.9 billion for the environmental levy. Eskom says it has not included this in its revenue calculation. Some clarification is needed here. Genesis proposes that R60.7 billion could be saved over the MYPD3 on coal costs, or 26% of total coal costs. Comparing our model to Eskom's proposal, we see that coal costs are R38 billion higher in this application over the MYPD3. At the very least, Eskom would need to explain this variation.

3.4 Employment and economic impacts

Electricity impacts on employment and growth in a number of ways. First and foremost is security of power supply, which when constrained can act as a physical barrier to investment and operations. Security of supply will be in part reliant on new investment but also on improved energy efficiency. Second, a clear and reasonable price path will be essential. If increased too fast, firms may simply cut back on



production. If the target and path for price increases is clear, it could give time for adjustment.

The Eskom model assumes that electricity sales would grow by 1.9% pa, on the basis of a growth elasticity of 0.6 and the introduction of energy efficiency. Without energy efficiency, this would assume that the economy grows by 3% pa to 2018. If the economy grew by 4%, this would imply that the economy had become more efficient to the extent of a reduction in energy usage by about 10% over the five years: This explains Eskom's campaign to do so. If this reduction in energy use were not realised, Eskom's projected output would act as a brake on economic growth.

Economic and employment growth are likely to be hampered by electricity availability, at least until 2016. The Medium-Term Risk Mitigation (MTRM) Plan was issued to promote discussion of options for electricity security to 2017.

The Plan shows a potential shortfall that would mostly be filled by the feeding in of ***independent power producers and by co-generation***. However, the IPPs and co-generators are being signed up too slowly to fill the gap timeously. A central policy question asks why the process of procuring energy and efforts to promote energy efficiency have proceeded so slowly. The steps to be taken are known, so the problems may lie in the process of decision making. While not the subject of the MYPD process, a number of concerns can be proposed based on extensive interaction with different stakeholders. The first challenge for rapid and meaningful action seems to lie in the complex and dispersed decision making structures in government, with the Department of Energy setting policy, Nersa regulating, the Department of Public Enterprises as the shareholder, and dti or Treasury having some responsibility for energy efficiency incentives and Eskom financing. The second set of issues relate to the role Eskom plays. It is currently a crucial source of information for decision making, and yet is also a monopoly provider. It is meant to expand the base of energy generation, but at the same time sign on external providers and encourage energy efficiency. It may be conflicted in this role, since it is an investor and provider, but also is meant to be responsible for drawing in competing generators and promote energy saving. Third, Eskom has stated a concern in being able to sign long term power purchasing agreements in the context of three year pricing determinations by Nersa. In turn, independent suppliers are not incentivised to enter the market without long term certainty that the power will be purchased, since currently Eskom is a monopsony as well as a monopoly. There are plans to move power procurement out of Eskom and into an Independent Systems Marketing Operator (ISMO). This is informally being done for renewable power purchases from the DoE but with oversight of DoE and Treasury. It is intended that the ISMO would procure and sign up the independent producers. A long term approach to pricing, giving an approach for a minimum of ten years is nevertheless required to offer certainty.

Improving energy efficiency is one way to reduce pressure and ensure more energy is available. Certainly, the MYPD3 application, the IRP2010 and the Risk Mitigation Plan rely heavily on improved energy efficiency. This would be beneficial as, in 2007, SA ranked 34th out of 128 countries in terms of energy to GDP ratios. SA's energy intensity arises as a result of the industrial composition, as well as energy inefficiency.

Data from the Department of Energy shows that many industries were already improving their energy efficiency, even in the context of low prices and prior to the energy crisis in 2008². This effort to reduce energy usage became more intense and explicitly discussed from the period of the 2008 rolling blackouts with the aim of enabling Eskom to stabilise the grid. There is uncertainty about the cause of the drop in energy intensity.

In 2010, we did a study to explore whether firms were reacting more forcefully now that the challenges and opportunities are clearer. We held focus groups with three sectors (namely energy intensive users, mixed industries including agriculture, and property). While the energy intensive users are understandably well coordinated and clearly representing their interests, other sectors are aware of the issues but not nearly as well represented. Some common issues arise such as whether firms will cut back operations in response to price increases and rationing, or whether they will adopt more efficient processes and technology. The investment costs have to be weighed up against the challenges experienced in the economic downturn, especially in low margin industries such as agriculture. The property sector has a special challenge as owners and managers are not the end users, and an estimated 40% of electricity usage is controlled by the tenant. In SA, properties change hands regularly, and the lease periods also tend to be short by international standards: this reduces the incentive to invest in energy efficient measures. Municipal shortages are slowing down new and expanded investments: many municipalities find they are unable to supply large investments. The diffusion of knowledge on process and physical technologies for energy efficiency will be of benefit. The Energy Services Companies (ESCO's) are meant to assist in this regard, however some respondents believed they were too vested as they were sometimes linked to vendors.

There are a number of policies that could impact on improving energy efficiency – some carrots and some sticks. In the first instance, the rising price will have an impact, potentially reducing consumption by 15% according to the IRP2010. A suite of tax and cash incentives have been introduced, but still have to be tested. The broad range of relevant incentives are reviewed in section 10 of the report. In 2010, the dti announced the a tax allowance incentive (Section 12 i) aimed at supporting new and expanded investments in manufacturing. This can include an upgrade involving cleaner production technology or improved energy efficiency. The value of this incentive could be as much as 35% to 55% of an investment. A new energy saving tax allowance (Section 12 L) was finally introduced in September 2011, calculated on the basis of the amount to energy saved. These incentives are to be welcomed, although they are being introduced at a slow pace. Incentives often require some time for diffusion, and this can take a number of years. Smaller manufacturing firms can already benefit from the dti's Enterprise Investment Programme, which can cover a substantial portion of the capital costs in a new or expanded investment. Of course, there are other programmes such as Eskom's Demand Side Management programme. Support will be needed for a wider range of industries, including property

² Tracking energy intensity across the economy will be an essential part of monitoring of behaviour change. Yet the data gathered by the Department of Energy does not currently seem to reflect trends correctly. Our view on this emerged from a first scan of the figures, but also as a result of the interaction with firms. It is recommended that more reliable electricity consumption data be gathered.

and accommodation. The dti will need to actively promote the effective use of these incentives, ideally in conjunction with technical support and knowledge diffusion in respect of new physical and process technologies. While a strong Rand should have worked in favour of new technology adoption, the economic downturn discouraged new investment and expansions.

Should the gap in electricity supply not be filled, as seems likely, *rationing* will be necessary: in fact, it is being implemented. There is a trade-off between supplying existing businesses, business expansions, or new investments. Currently, the simplest route is to ration highly energy-intensive companies directly supplied by Eskom, generally the smelters and the mines. Government faces a legal challenge as it cannot legally deny a new investor access to electricity. However, our focus groups showed that, in practice, the municipalities are delaying approval for new connections to large new investments and expansions. While energy efficiency may rise as a result, in this short period it is more likely that this rationing will lead to lower than potential output. This will most certainly dampen potential growth and employment at a time when it is sorely needed. This result is not consistent with the aims of the National Development Plan, and will make it virtually impossible to achieve its targets if the economy is constrained for 5 years.

Voluntary reductions in energy usage continue to be implemented by some industries prepared or able to cut back on production. The sacrifice of some industries is at the present time enabling the supply of other industries. Some firms say they are not in a position to implement expansion plans as result of a lack of availability of an electrical connection. Eskom says it does not envisage implementing power buy-backs in the MYPD3, where firms were compensated for reducing electricity usage in 2012.

The impact of rising electricity prices on employment, GDP and inflation

In 2010, we deepened our capacity to model the economy wide effects of electricity price increases on consumer and firms. However, this modelling looks at what would happen after a once off increase. We modelled the impact on the economy of a once-off price increase of 35%, which was what Eskom asked for in November 2009. The impact on Gross Domestic Product (GDP) would be very small, approximately -0.1%. The producer price index would rise by 1.3% more than it would otherwise, and this would raise the cost of a representative basket of South African exports by 0.9%. At first glance, this result might seem surprising. But it must be remembered that electricity accounted for only 1.1% of all costs in services and manufacturing. Electricity contributed 2% or less to total costs in 72 out of 94 sectors in the economy. In 2009, there were ten sectors where electricity accounted for about 4% of costs or more, such as chemicals, non-ferrous metals, general hardware, textiles, tyres, gold mining, and accommodation.

This understanding must be revised in the context of continuous increases. The MYPD3 proposal would raise the real price of electricity by 2.5 to 3 times over the decade period from 2009 – 2018. This does not imply that effect is ten times that reported in the model above, since consumers and firms are likely to adjust. However, this response could involve either improved efficiency, or for firms, cutting output. We don't have a clear understanding of this response, and it is not correct to necessarily attribute firm closures or falls in output to the electricity price, as has been asserted by many submissions to the MYPD3 process. There are many other reasons why the economy could contract – such as falling global demand, labour strife, weak competitiveness more generally, etc. Nevertheless, electricity would no doubt be a larger percentage of costs than they were at the start of this process. For the ten sectors where electricity accounted for about 4% or more of costs, by 2018, this could account for more than 11% of costs. The likely impact would be less, assuming efficiencies are implemented. Even so, this is significant. For most sectors, electricity could account for around 2-3% of total costs – a big increase, but still a small proportion.

We looked at the impact of a once-off 25% increase in the electricity price on households. In this case, the Consumer Price Index (CPI) for all households rises by 0.88%, with 0.53 % coming from direct effects and 0.35% from indirect effects. The impact is greater on poor households than on rich ones. This is driven almost entirely by the direct impact, which in turn is driven by the relative shares of total expenditure on electricity. Thus the richest households allocate 0.8% of their expenditure to electricity, so the 25% price rise raises their expenditure by 0.2%. By contrast, the poorest households spent 5.4% of expenditure on electricity, so the 25% increase raises their expenditure by 1.35%. Against this, the indirect effects are relatively uniform across household groups, contributing 0.40% to the CPI increase for the poorest and 0.32% to that for the richest. Again it would have to be noted that the total increase proposed by Eskom involves the real price ultimately rising by 3 to 4 times over a decade. So again the overall impacts would be larger than reported above, but would to

However, it is expanding its Demand Market Participation, where firms are compensated for reducing loads for short periods of time, and will continue to implement the Energy Conservation Scheme focused on the top 500 users who will face penalties if electricity reduction targets are not achieved.

Electricity impacts on employment and growth in a number of ways. First and foremost is security of power supply, which when constrained can act as a physical barrier to investment and operations. Security of supply will be in part reliant on new investment but also on improved energy efficiency. Second, a clear and reasonable price path will be essential. If increased too fast, firms may simply cut back on production. If the target and path for price increases is clear, it could give time for adjustment.

Given the slow pace of signing up IPPs, cogeneration and imports, it seems likely that electricity supply will be constrained at least until 2017. It is urgent that these processes be implemented more rapidly. Energy efficiency measures and rationing are two approaches to addressing shortfalls. Energy efficiency will stimulate the economy and promote employment, while rationing can cap growth rates below potential. In the SA context of high unemployment and slow economic growth it is urgent that the emphasis be on expanding supply and improving efficiencies.

Our initial modelling in 2008 and 2010 showed limited impacts on growth arising from the proposed increases. A once-off increase of 35% would lead to GDP being -0.1% less than otherwise, but the producer price index would rise by 1.3% more than otherwise. However, this looked at the impact of once-off increases. The MYPD3 proposals could lead to the real price increasing by 3 to 4 times over the decade from 2008-2018. There are ten sectors that will be substantially affected including chemicals, non-ferrous metals, general hardware, textiles, tyres, gold mining and accommodation. In these sectors, electricity accounted for more than 4% of total costs. In the absence of energy efficiency improvements, electricity might account for more than 11% of costs by 2018, substantially eating into profitability and competitiveness.

The impact of electricity price increases on poor households is often framed in terms of direct burden on low income households. Our review of municipal pricing shows that indeed this is a concern. Yet this is only one half of the challenge. The other half relates to employment creation, and price increases created indirectly where the price of goods normally bought by poor households rise disproportionately as firms pass on their electricity price increases.



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