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Household tipping points in the face of rising electricity tariffs[1]

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Abstract

Since 2008 electricity prices have increased substantially and will have to continue to rise to ensure Eskom's sustainability. Though critical, electricity spend is a relatively small proportion of a household's total consumption expenditure. Thus residential electricity demand has not been significantly affected by electricity price increases to date. Nevertheless, the combination of ongoing electricity price increases with high inflation, high unemployment rates and generally eroded household disposable income will likely compel households to reduce their electricity usage. This research explores the ability of households to make alternative energy and/or energy efficient investments to reduce their electricity demand and is comprised of three components. First, the effect of rising electricity tariffs on future household incomes is examined by applying electricity tariff scenarios to the average household electricity expenditure for each income decile, obtained from the Income and Expenditure Survey. The second component of the study looks at the ability of households – this time divided by Living Standard Measure groups – to invest in a particular basket of technologies that will reduce their consumption of electricity. Cost-benefit and affordability considerations for each household group are applied to the different technology baskets to determine which investment decisions particular household groups are likely to undertake and when. Finally, these findings are aggregated across households to determine the likely effect on overall electricity demand. It is found that middle income households will be the most vulnerable to rising tariffs due to their limited ability to invest in technologies that significantly reduce their electricity usage. Assuming that 20 per cent of households that can afford to invest in particular technologies do so, then around one quarter of total residential electricity sales could potentially go off-grid under the base case tariff scenario by 2030.

JEL Classification codes: D12, L51, L94, O33, R22

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1 Introduction

Between 2008/09 and 2016/17, electricity prices have increased by an average of 11.1 per cent per year, in real terms.[4] For Eskom to be financially sustainable, electricity tariffs will have to continue to rise (Molefe 2016). This implies that municipalities – who purchase bulk electricity from Eskom – will also have to increase their tariffs. While electricity spend is a relatively small proportion of a household's total consumption expenditure (2.3 per cent of average expenditure in 2010),[5] it is critical for household activities such as lighting, cooking and heating. Consequently, household demand for electricity has been relatively inelastic to date (Inglesi-Lotz & Blignaut 2011). Nevertheless, the combination of electricity price increases with relatively high inflation, high levels of unemployment and generally eroded household disposable income will result in households making certain decisions regarding their electricity consumption, including:

i. *Reducing electricity usage and improving energy efficiency*. Examples of this include turning-down the geyser and switching off non-essential appliances. However, many households have adopted this behaviour already (Department of Energy 2014) but there are limits to the benefit that it can provide to households.

ii. *Replacement of existing electric appliances with non-electric ones, or ones with significantly lower energy consumption*. While many households have already invested in some technologies (Department of Energy 2014), such as CFLs for example, there is still potential for further investments in LEDs, solar water heaters and gas appliances. Poorer households may return to more basic forms of energy generation such as wood and paraffin.

iii. *Cutting other expenditure.* Whilst households may choose to limit expenditure in other areas to make allowances for rising electricity costs, this can only be done to a limit and will likely only be pursued once other electricity cost-saving measures have been put in place.

iv. *Meter tampering and connecting illegally.* Non-technical load losses are quite prevalent in certain municipalities and Eskom has highlighted that harsh economic conditions have led to high levels of electricity theft (Eskom 2014). Tariff increases coupled with slow economic growth will likely exacerbate this issue. However, the increased introduction of pre-paid meters and more frequent meter inspections may curb this behaviour to some extent (Maphaka, Naidoo & Moodley 2010).

While these decisions will have positive impacts on household disposable income and/ or environmental outcomes, these decisions could have negative consequences. As households begin to demand less electricity, or choose not to pay, electricity revenues at municipalities and Eskom will be affected. This objective of this paper is to quantify the impact of household decisions around mitigating the effect of rising electricity tariffs.

The first part of this paper explores existing literature around elasticity of demand for electricity, the impact of rising tariffs on households, household investment in electricity efficiency, electricity tipping points, as well as Eskom and municipal tariff price paths. This is followed by an analysis of the effect of tariff increases on household disposable income, and then the potential for households to reduce their electricity demand through particular

[4] Own calculation based on NERSA decisions
[5] 2011 Income and Expenditure Survey

investment decisions. These findings are then used to determine the potential loss in electricity demand that municipalities and Eskom could experience. Some recommendations are provided as part of the concluding remarks. It must be noted that the nature of this research requires the use of a number of assumptions and caveats, which are highlighted throughout the paper.

2 Literature review

The current study essentially examines how sensitive households are to increases in the cost of electricity, relative the costs of off-grid investments. It follows on from work by Boonzaier, Goliger, Makrelov and McMillan (2015) which assessed the potential for own generation by large industrial, mining and commercial electricity customers.

While there have been a few other studies calculating the elasticity of demand for electricity, we find that that the studies are often outdated and use data points from the years during the electricity and financial crisis. Inglesi and Pouris (2010) used Engle-Granger methodology to model electricity demand with data from 1980 until 2007 and found that in the short-run, firm demand for electricity is influenced by economic and population growth, whilst in the long run, income and the price of electricity are larger determinants. In 2014, Inglesi-Lotz concluded that households will increasingly focus their efforts on demand side management or turn to other sources of cheaper energy, depending on the level of household income. All these studies recommended that changing levels of elasticity or tipping points should be examined in more detail.

There have been studies both internationally and locally on low income households and investments in energy efficiency as a way to improve household welfare. A study commissioned for the European parliament, analysed the impacts that energy efficiency has on low-income households across Europe (Ugarte, van der Ree, Voogt, Eichhammer, Ordonez, Reuter, Schlomann, Lloret & Villafafila, 2016). It found that the rise of energy poverty is largely due to a lack of investment in energy efficiency and appropriate social welfare, particularly in Eastern European states. Overall, it was concluded that energy efficiency policies that target low income households have positive social impacts and are more effective in reducing energy poverty than only using social policies. The importance of information campaigns and the introduction of tax credits for energy efficiency investments was highlighted.

Ameli and Brandt (2014) explored why energy efficiency investments are often not taken up by households, despite their positive impacts on household welfare. Using OECD survey data, they found that that households' likelihood to invest in electricity efficient technologies depends largely on home ownership, income, social context and households' energy practises. The survey found that households tend to give a much larger weight to the high up-front costs of energy efficiency investments than the long-term positive financial impacts. However, this survey was done for high income countries where electricity tariffs have not risen as sharply as in South Africa's case.

In South Africa, the Department of Energy (2012) highlighted that almost three-quarters of households in the poorest quintile are energy poor and that even 12 per cent of households in the richest quintile are also energy poor. Continued tariff increases will exacerbate this situation. Yet, at the same time they find that only 20 per cent of households are aware of how they can save electricity. A NEDLAC (2010) study focused on subsidy support for poor households in light of the imminent tariff increases at the time, with little focus on technology choices as a way to reduce the negative impacts of tariff increases.

However, there is scope for improved energy efficiency amongst households in South Africa. Altman et al. (2008) evaluated the impact of load shedding on households and industry during 2008 and 2009. It found that there was significant scope for energy efficiency improvements by households and industry and that savings of between 15 to 20 per cent could be possible and that higher income groups had more opportunities for power saving through using solar panels, geyser blankets, low-energy light fittings, gas heating/ cooking, micro wind turbines, amongst others. Franks (2014) conducted a survey of township residents and suggested that if poor households in informal settlements face above inflation tariff increases in the future, paraffin use will rise. Yet, it is unlikely that households will stop using electrical appliances that they already own given the sunk cost already committed to.

There are also implications of households switching to renewable technologies on municipal incomes. However, a study on the Drakenstein Municipality (Kritzinger & Meyer 2015), which installed roof top PV for residential and industrial use, found that the potential impact of private PV installation on the municipal income will probably have less of an impact than commonly believed in the short term. But a breakthrough in the costs and practicality of battery storage technology could be a leap enabler, leading to a large scale increase in self-sufficient off-grid consumers. This study does not look at the combined impacts of the adoptions of other off-grid technologies that are less expensive.

In looking at the impacts of rising tariffs on electricity suppliers, the Financial and Fiscal Commission (Peters undated) evaluated the impacts of electricity price increases on municipal tariffs and revenues. Using municipal data from Treasury, their modelling finds that there is negative relationship between electricity tariff increases and municipal expenditure and revenue. Peters also highlights the fact that this situation is concerning in light of the fact that municipalities have grown reliant on their electricity tariff profits to fund other non-electricity related activities. Government needs to manage the risk associated with higher electricity tariff, particularly with regards to their impacts on municipalities given that a number of municipalities are already in a precarious financial position.

This paper attempts to research undertaken on elasticity of demand and ‘tipping points’ by updating older research and by including other tipping points into the analysis. There has been little local empirical research on the ability of households to switch to renewable technologies and in part, this is because the price of renewables has been prohibitive for households. However, given the increasing electricity price trajectory and the falling cost of alternatives, it is useful to revisit this area of work. This study brings all these considerations together and aggregates the household level results to determine the impact on the sales of electricity providers.

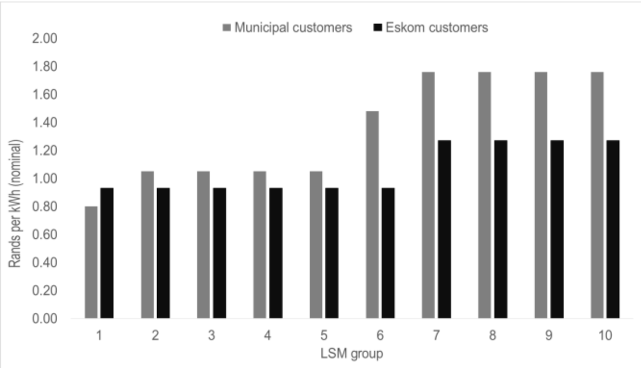
3 Tariff paths

About 75 per cent of households get their electricity from municipalities, the remainder (generally low income households) are Eskom customers.[6] Municipal customers tend to face higher electricity tariffs (Figure 1), due to the additional cost of distribution. Further, municipalities make use of cross-subsidies to lend some support to lower-income households.

[6] Eskom 2016

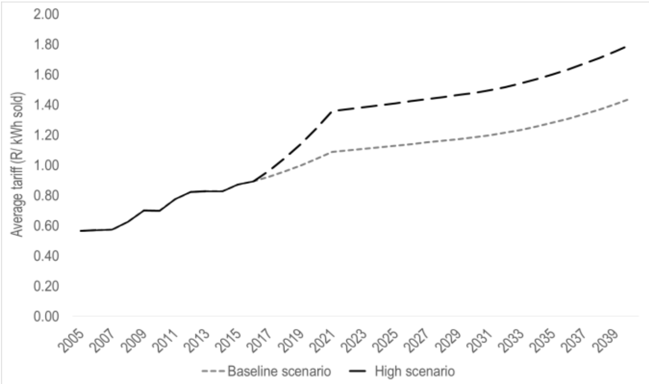
Over the past 8 years, electricity tariffs have increased significantly. Looking forward, the current research looks at two electricity tariff path scenarios: a baseline- and a high- tariff scenario (Figure 2). The lower baseline scenario assumes that electricity tariffs will increase by 10 per cent per annum, in nominal terms, between 2017 and 2021, and from 2022 it is assumed that tariffs grow by inflation. Under the high tariff scenario, it is assumed that electricity tariffs will grow by 15 per cent per annum, in nominal terms, between 2017 and 2021 – thereafter growing by inflation as well.

Figure 1: Average tariffs for municipal and Eskom[7] customers in 2015 by LSM group, R/kWh (nominal)



Source: NERSA (2015)

Figure 2: Impact of tariff scenarios on Eskom's average residential tariffs, R/kWh (real)



Source: Eskom and own calculations

As Eskom and municipal tariffs are differentiated, in essence four electricity tariff paths are modelled in this study: an Eskom baseline tariff, a municipal baseline tariff, an Eskom high tariff and a municipal high tariff. The table below illustrates the actual average tariffs in 2015 as well as the projected tariffs by 2030, using the assumptions above.

Table 1: Comparison of tariffs faced by residential customers, R/kWh (real)

	2015	2030 (projected)
Eskom baseline	0.87	1.18
Municipal baseline	1.05	1.42
Eskom high	0.87	1.48
Municipal high	1.05	1.77

Source: NERSA, Eskom and own calculations

4 The impact of rising tariffs on household income

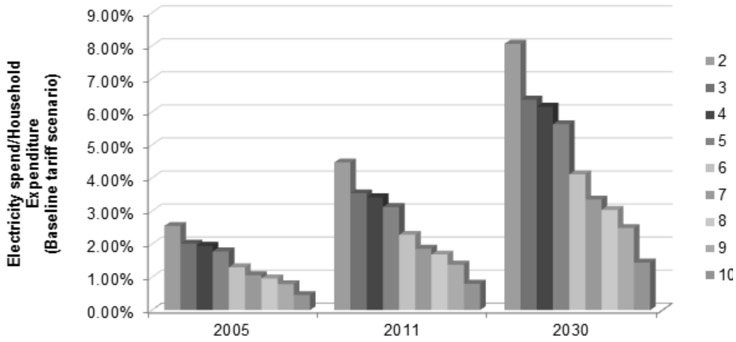
In this section, the electricity tariff increase scenarios as described above are applied to average household electricity expenditure, for each income decile, obtained from the 2011 Income and Expenditure Survey. This provides projections of future household spend on electricity per decile, under the assumption that household electricity demand, as well as household income growth, stays constant over the period of analysis. Household income is also assumed to grow at a constant and homogenous rate.

Figure 3 illustrates electricity expenditure as a proportion of household expenditure for income deciles two to ten for 2005, 2011 (both actual) and 2030 (projected).[8] In all deciles,

[7] Based on tariff blocks

electricity spend almost doubles by 2030, however, lower income households are the most affected as electricity represents a larger proportion of their expenditure basket. For example, households in decile two spend 4.5 per cent of their total household income on electricity in 2011. By 2030, this will rise to 8.1 per cent in the baseline tariff scenario. It must be noted, that only the direct impact of electricity price increases on households are considered and does not include the "triple effect" of an increase in food, transport and electricity costs, as highlighted by Franks (2014). The significant increase in future electricity expenditure implies that households will gradually start looking at ways to reduce their electricity demand and cut their electricity bill, if they have not begun to do so already.

Figure 3: Electricity expenditure as a percentage of household income by decile, under the baseline tariff scenario



Source: IES (2005 and 2011) and own calculations

5 The ability of households to invest in alternative technologies

The second aspect of this study looks at the ability of households – this time grouped by Living Standard Measures (LSM)[9] – to invest in a particular basket of appliances/ technologies that reduces household reliance on the grid. LSM income levels correlate closely with income deciles as per the Income and Expenditure Survey. Data on average household electricity consumption by LSM was obtained from Eskom and it is assumed that household electricity consumption stays constant over the whole period of analysis. Feasibility assessments for each of the selected technologies[10] were conducted under the various tariff scenarios, which included operating, maintenance and replacement costs.[11] Individually, these technologies have a positive net present value under all electricity tariff scenarios - even in 2016, the first year of investment. In other words, it already makes financial sense to invest in these technologies/ appliances, as the investment costs are outweighed by electricity cost savings, over their useful life. Next, these technologies are grouped into four distinct "baskets" that households are assumed to choose from:

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[8] It is assumed that real income increases by around 2 per cent a year in real terms from 2011. Decile 1 is excluded from the analysis as electricity expenditure data for this decile is unreliable.

[9] South African Advertising Research Foundation 2012

[10] LED light bulbs, gas heater, solar water geyser, two burner gas stove, four burner gas stove and oven and a rooftop solar PV. Price and product information was obtained from the websites of major retailers, such as Game and Makro, as well as businesses specialising in the installation of solar water geysers and roof-top PVs.

[11] For example: purchase of gas, the replacement of light bulbs, annual maintenance of a solar PV system, etc.

Table 2: Description of technology baskets and their impact on household electricity consumption[12]

Basket	Contents	KWh savings p.a	Average avoided electricity costs per household p.a (Rands)
1	Gas hotplate; 5 LEDs; Gas heater	1 878	2 539
2	Four plate gas stove & oven; 10 LEDs; 2 gas heaters	4 852	6 560
3	Four plate gas stove & oven; 10 LEDs; 2 gas heaters; Solar Water Heater	6 875	9 213
4	Solar PV	6 300	8 518

Source: Own calculations

While these investments will yield a positive net present value, it does not imply that all households can afford to invest in all baskets. For the purposes of this analysis, it is assumed that households will only begin to invest in these technologies when the investment costs in the first year of investment are equal to or less than five per cent of annual household income (per LSM group) in a particular year. In other words, it is assumed that households are willing to bear slightly higher expenditure in the initial years, to a limit, in return for future savings. For example, if the initial year of investment is 2017 and the net cost of investment in Basket 2 equates to 6.3 per cent of a household's income in that year, then it is assumed that the household will not invest. But if in 2019 it costs 4.9 per cent of the household income to invest, then the household will choose to invest in Basket 2 in that year.

Consequently, one can determine the electricity tariff tipping points of various LSM groups. As municipal tariffs are higher than Eskom's tariffs for middle to high income households, municipal customers are likely to reach tipping points earlier. It is assumed that only households in LSM 1 to LSM 6 will select Basket 1 as it is more suited to low income households. To note, a limitation of this study in that each LSM group is represented by a household with an average income for that LSM. Households at the upper and lower ends of that same LSM group will have different tipping points.

The table below illustrates the tipping points under two extreme tariff scenarios: (i) Eskom tariffs under a base path and (ii) municipal tariffs under a high tariff path:

[12] The kWh savings in Table X incorporates many assumptions around household usage of appliances e.g. it was assumed that household's use a gas heater for an average of five hours per day for three months of the year.

Table 3: Household tipping points per basket under low and high tariff scenarios

	Eskom base tariff (low scenario)	Municipal high tariff (high scenario)
Basket 1	• From 2017: LSM 1-6 can afford to invest	• From 2018: LSM 1-6 can afford to invest
Basket 2	• From 2021: LSM 7 -10 can afford to invest • From 2030: LSM 6 can afford to invest.	• From 2017: LSM 7 – 10 can afford to invest • From 2020: LSM 6 can afford to invest. • From 2029: LSM 5 can afford to invest • From 2034: LSM 4 can afford to invest
Basket 3	• From 2023: LSM 7 -10 can afford to invest.	• From 2018: LSM 7 -10 can afford to invest.
Basket 4	• From 2024: LSM 7 -10 can afford to invest.	• From 2018: LSM 7 -10 can afford to invest.

Source: Own calculations

Table 3 shows that the tipping point for many low income households has already been, or will soon be reached.[13] It is likely that many of these households have already made investments in Basket 1 type-goods. Tipping points for higher income households, however, will be reached within the next couple of years. This means that municipalities are likely already facing a decline in electricity sales to high income households. This is corroborated by Peters at the Financial and Fiscal Commission. Lower tariffs faced by Eskom customers delay the tipping points by between four to six years.

Under a high tariff scenario, household electricity expenditure can be so high that even low income households (in LSM 4, LSM 5 and LSM 6) will view Basket 2 as relatively affordable. Middle income households (particularly in LSM 5 and LSM 6) will be the most vulnerable to rising electricity tariffs. This is because they are unlikely to invest in Basket 1 as their electricity usage is too high (or they have a preference for appliances beyond those available in Basket 1), yet Baskets 3 and 4 are prohibitively expensive.

6 Implications for broader electricity demand

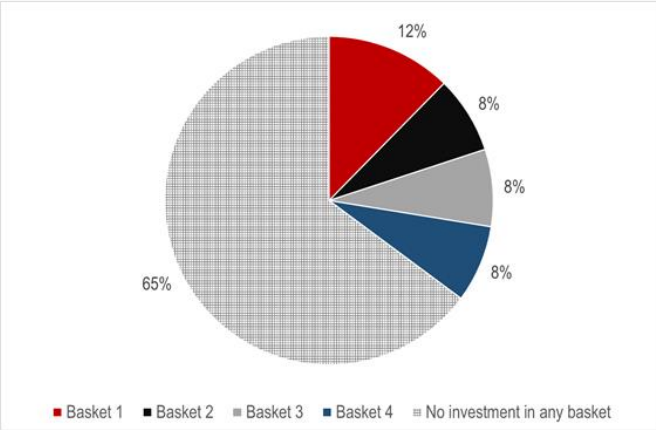
This section translates the above findings at an aggregate level. Altman *et al*. (2008) concluded that while at an individual level household electricity consumption is fairly small, at aggregate, household electricity consumption is significant. Although the average household in a particular LSM may be able to afford a specific basket, it is unlikely that all households in that LSM will decide to invest in a basket.[14] For the sake of simplicity, this research assumes that for each basket, 20 per cent of households that can afford to will invest. As Basket's 2, 3, and 4 are generally affordable for higher income households, this assumption implies that 60 per cent of higher income households will choose to invest in one basket or another.[15] Overall, this assumption translates to 35 per cent of all households in South Africa choosing to invest in one basket or other and 65 per cent of households do not invest in any technology at all (Figure 4).

[13] It must be noted that municipalities have lower tariffs for low income households (through cross-subsidies) which accounts for the delayed tipping point for low income households under the municipal tariff scenario.

[14] This may be for various reasons such as: a household is at the lower end of the income bracket of the LSM, safety concerns (e.g. gas usage); building/ sectional title regulations; a lack of knowledge of technologies; other expenditure priorities; etc.

[15] For example, for LSM 9, it is assumed that 20 per cent of households will invest in Basket 2 only, another 20 per cent in Basket 3 and 20 per cent in Basket 4. Therefore, this implies that the remaining 40 per cent of households in this LSM will not invest in any basket, even though it makes financial sense.

Figure 4: Assumption regarding uptake of technology baskets, as a % of total households



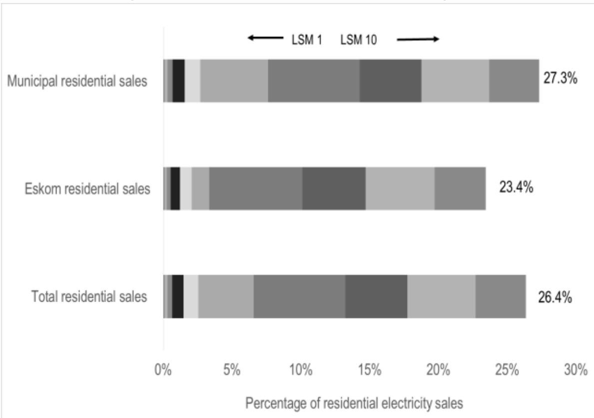
Source: Own calculations

The formula below was used to determine the implications of the above findings and assumptions on broader energy demand:

> Average electricity saved per household per basket **x** number of households in each LSM group **x** 20% (uptake assumption) **x (**proportion of Eskom customers + proportion municipal customers**)**
>
> = Total electricity demand that could potentially go off-grid

We find that 26.4 per cent of total residential electricity sales could go off grid, assuming that 35 per cent of households will invest in some basket or other. As a proportion of Eskom and municipal sales,[16] 23.4 and 27.3 per cent of sales are likely to go off-grid respectively (Figure 5) by 2030. The bulk of the shift will come from LSM 6 to LSM 10.[17] These impacts are then compared to aggregate electricity sales by Eskom and municipalities.

Figure 5: Forgone residential electricity sales due to a 20% uptake, as a % of electricity sales



Source: Own calculations

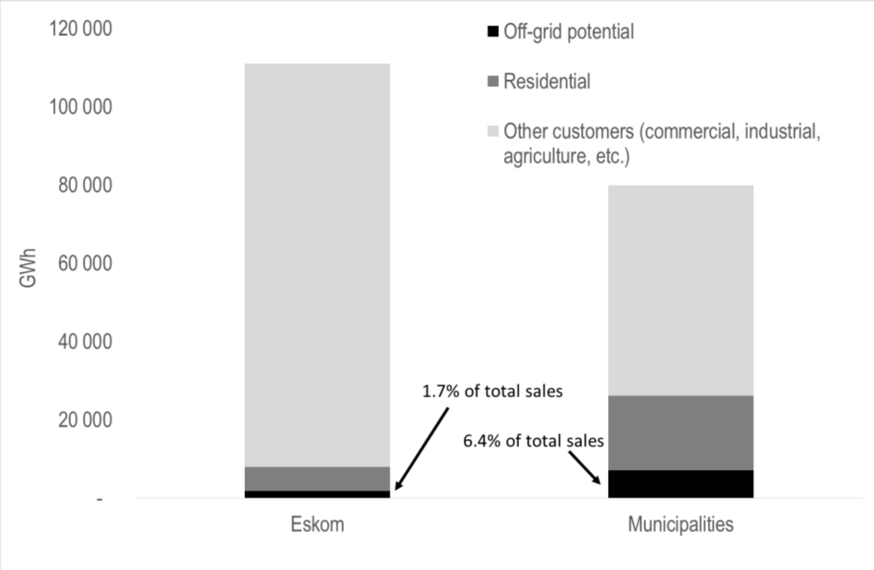
From Figure 6, it can be seen that the impact of a 20 per cent uptake by households represents a relatively small proportion of Eskom's total electricity sales (1.7 per cent). For

[16] Data obtained from Ms F Salie

[17] Low income households represent roughly a third of total electricity consumption – the remaining is consumed by households in LSMs seven to ten.

municipalities, the impact is nearly four times larger. They stand to lose 6.4 per cent of their sales to off-grid investments, in the baseline scenario.

Figure 6: The size of the impact of uptake in 2030 relative to total Eskom and municipal electricity sales in 2015 (GWh) – baseline scenario



Source: Own calculations

7 Concluding remarks

This study analyses the effect that future increases will have on household disposable income and the options that households have to mitigate this impact from an investment perspective. Further, an attempt is made to quantify the impact of this shift on municipalities and Eskom as residential customers move off the grid. It is found that even if electricity tariffs follow a moderate tariff path, household disposable income will be significantly affected if households continue consuming electricity at current levels, with electricity expenditure almost doubling by 2030 in many instances.

Looking at the ability of households to reduce their electricity consumption through investments in “off-grid” appliances and technologies, it is determined that for many household’s, tipping points will be reached within the next few years, under a baseline path, as the relative costs of these investments fall. A high tariff path will accelerate this process. Middle income households (LSM 5 and LSM 6 in particular) will be the most vulnerable to rising tariffs. This is due to their higher levels of electricity consumption, yet lower average income limiting their ability to invest in progressive technologies.

Using various assumptions, it is determined that the above tipping points could reduce total residential electricity sales by 26.4 per cent, under the base case scenario. Eskom could lose 1.7 per cent of their own residential sales while municipalities could lose 6.4 per cent of their residential sales. The bulk of electricity sales will be lost in LSM 6 through to LSM 10. While the impact on total electricity sales may not be very significant on its own, it must be considered in a broader context: the bulk of the impact on electricity sales will come from commercial and industrial customers. They have the scale and finance capabilities to undertake these investments – more so than households.

This should be viewed as an opportunity for municipalities to broaden their revenue streams and possibly invest in renewable strategies. For Eskom, there needs to be reconsideration of its current structure. At the same time, consideration needs to be given to household's that are vulnerable to rising electricity tariffs, particularly middle-income groups. Investments in off-grid technologies should be encouraged through information campaigns and initiatives such as the replacement of geysers with solar water heaters by insurance companies.

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Annexure: Additional tables

Table 1: Description of technology baskets and their impact on household electricity consumption

Basket	Contents	KWh savings	% of average household consumption by LSM										Avoided electricity costs @ municipal tarriff scenario (Rands)									
			1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Gas hotplate 5 LEDs Gas heater	1 878	112%	93%	82%	64%	49%	31%	24%	22%	14%	9%	1 502	1 972	1 972	1 972	1 972	2 779	3 305	3 305	3 305	3 305
2	Four plate gas stove & oven 10 LEDs 2 gas heaters	4 852	289%	239%	211%	164%	126%	81%	63%	56%	36%	23%	3 882	5 095	5 095	5 095	5 095	7 181	8 540	8 540	8 540	8 540
3	Four plate gas stove & oven 10 LEDs 2 gas heaters	6 875	409%	339%	298%	213%	163%	115%	90%	79%	51%	33%	5 500	6 394	7 219	7 219	7 219	10 175	12 100	12 100	12 100	12 100
4	Solar Water Heater Solar PV	6 300	375%	311%	273%	213%	163%	105%	82%	72%	47%	30%	5 040	6 615	6 615	6 615	6 615	9 324	11 088	11 088	11 088	11 088

Source: Eskom data and own calculations

Table 2: Data on electricity usage and spend by LSM

LSM	Average consumption per annum (kWh)	Municipal tariff, 2015 (Rands per kWh)	Eskom tariff, 2015 (Rands per kWh)	Total electricity spend per annum - municipal customers (Rands)	Total electricity spend per annum - Eskom customers (Rands)
1	1 680	0.80	0.93	1 344	1 562
2	2 028	1.05	0.93	2 129	1 886
3	2 304	1.05	0.93	2 419	2 143
4	2 952	1.05	0.93	3 100	2 745
5	3 864	1.05	0.93	4 057	3 594
6	5 976	1.48	0.93	8 844	5 558
7	7 680	1.76	1.27	13 517	9 754
8	8 724	1.76	1.27	15 354	11 079
9	13 492	1.76	1.27	23 747	17 135
10	20 867	1.76	1.27	36 726	26 501

Source: Eskom, NERSA and own calculations

Table 3: Characteristics of households in each LSM

LSM	Characteristics of households	LSM	Characteristics of households
1	● Traditional hut dwelling ● Minimal access to services ● Ownership of a radio	6	● Large urban house/ townhouse ● Electricity, water in home, flush toilet in home ● TV sets, stove, fridge/ freezer, microwave
2	● Traditional hut/ shack ● Communal access to water ● Ownership of radio and stoves	7	● Urban dwelling ● Full access to services ●Full ownership of durables, incl. motor vehicle
3	● Traditional hut/ shack ● Communal access to water ● Ownership of radio and stoves	8	● Urban dwelling ● Full access to services ● Full ownership of durables, incl. PC
4	● Traditional hut/ shack ● Electricity, communal access to water, non-flush toilets ● TV sets, electric hotplates	9	● Urban dwelling ● Full access to services ● Full ownership of durables
5	● House ● Electricity, water on plot, flush toilet outside ● TV sets, stove, fridge, hi-fi	10	● Urban dwelling ● Full access to services ● Full ownership of durables

Source: South African Audience Research Foundation (SAARF)

Table 4: Real average prices for Eskom's residential customers (R/kWh sold)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Baseline scenario	0.57	0.57	0.57	0.63	0.70	0.70	0.78	0.82	0.83	0.83	0.87	0.89	0.92	0.96	1.00	1.04	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17
High scenario	0.57	0.57	0.57	0.63	0.70	0.70	0.78	0.82	0.83	0.83	0.87	0.89	0.97	1.05	1.14	1.24	1.36	1.37	1.38	1.40	1.41	1.42	1.44	1.45	1.46

Source: Eskom (up to 2015) and own calculations