Advisory Panel on the Socio-economic Impact of E-tolls

Public meetings

Terms of Reference
The Premier of Gauteng, Mr David Makhura, has established an advisory panel of experts to:

• Undertake a comprehensive assessment of the socio-economic impact of the introduction of the Gauteng Freeway Improvement Project (GFIP) in general and the e-tolls in particular on the economy and the people of Gauteng

• Invite proposals and submissions from the people of Gauteng and stakeholders on the socioeconomic impact and proposed solutions to the identified problems

• Submit findings and recommendations to the Gauteng Provincial Government

The panel is according seeking input on the direct and indirect benefits and costs of GFIP and the e-tolls

• What are the economic and social impacts of GFIP and the e-tolls?

• What is the impact of the GFIP and e-tolls on the environment?

• How and where are the costs and benefits of GFIP and e-tolls distributed across society and the economy?

Information sheets
The panel has met with key implementers and entities affected by GFIP and e-tolls, including the municipalities and the attached information sheets were made available to organised labour, business, civil society and transport organisations who have already made presentations to the panel.

Page 2 Fact sheet: Gauteng Department of Roads and Transport

Page 6 PRASA modernisation fact: PRASA

Page 7 Gauteng's e-tolling and sustainable development: Department of Environmental Affairs
FACT SHEET

THE DEVELOPMENT OF AN URBAN TOLL ROAD SYSTEM FOR GAUTENG

1. Background

1.1 Freeways
1.1.1 There is no direct access to the carriageways of freeways as access is only allowed via interchanges. Freeways are designed for operational speeds of 120km/h and have very high geometric standards. Freeways are the only type of roads that can be tolled (due to the fact that access can be controlled).

1.2 Hierarchy of roads
1.2.1 There are basically three types of roads with each having a specific role and function:
   1.2.1.1 Long distance mobility – National roads (e.g. N1, which runs from Mussina in the North to Cape Town in the South of the country). These roads are normally freeways. Due to the long distances the design speeds are 120km/h;
   1.2.1.2 Provincial wide mobility – Provincial roads. There are a few Provincial freeways (R21, R24, R59) but the bulk are expressways (K Routes) and single carriageways; and
   1.2.1.3 City accessibility – there are a few Provincial and the bulk of Municipal single carriageway roads that services the home-work and farm-to-market trips.

1.3 The user-pay principle
1.3.1 The user-pay principle for financing freeways in South Africa is well developed and accepted by the traveling public for long distance mobility (N1, N3, N4 etc.)
1.3.2 The first toll road was completed in 1983 (Tsitsikamma toll road).
1.3.3 Only the National Department of Transport (and SANRAL) has the Legislative competency to build toll roads and to operate them as toll roads.
1.3.4 These toll roads were developed on the following bases:
   1.3.4.1 Newly built freeways were tolled from day-one of their operations;
   1.3.4.2 If existing roads formed part of the toll road these would only be tolled once an extensive upgrade in one or more of the following areas had been undertaken:
      1.3.4.2.1 Capacity increase;
      1.3.4.2.2 Rehabilitation & resurfacing;
      1.3.4.2.3 Lighting;
      1.3.4.2.4 Minor geometric improvements;
      1.3.4.2.5 Road safety improvements; and
      1.3.4.2.6 An alternative, non-tolled route was available.

1.4 Legislation supporting Toll Roads

1.5 Policies supporting Toll Roads
1.5.1 White Paper on Transport, 1996 (User-pay principle);
1.5.2 Moving South Africa, 1998 (user-pay principle); and
1.5.3 NDP, 2013 (projects: Wild Coast & De Beer’s Pass identified as projects that will be constructed through user charging.)
2 The Gauteng Freeway Improvement Plan (GFIP)

2.1 Gauteng is the economic heart of Southern Africa:
   2.1.1 Covers only 1.42% of the total land area;
   2.1.2 Produces 34% of RSA’s GDP;
   2.1.3 Largest provincial population;
   2.1.4 GDP is expected to grow at 2% higher than the rest of the country;
   2.1.5 Increased economic growth, increased in-migration from other provinces and countries North of South Africa’ borders.

2.2 Economic growth has as a consequence an increased demand for the movement of people, goods and services, which leads to an increase in the prevalence and duration of road congestion. This results in a real threat to long term economic growth of the Province; a reduction in the quality of life of our people and a degradation of the environment.

2.3 Gauteng, as all other Provinces, has had a shortage of funds for road construction and maintenance over the past 30 years.

2.4 Due to this shortage and the fact that SANRAL could develop the national roads as toll roads the role and function of national roads changed from long distance mobility routes to short distance accessibility routes that carry the bulk of the urban traffic in Gauteng.

2.5 During the early 1990s it became clear that the Provincial freeways could not be funded through the normal MTEF allocation.

2.6 The then Department of Public Transport & Roads in Gauteng developed a strategy to introduce Provincial Toll roads in order to address the growing demand for the movement of people, goods and services and to counter the ever increasing congestion in the Province.

2.7 This plan was based on the following points of departure:
   2.7.1 The development of the necessary Provincial Legislation to allow for the building and tolling of Provincial Toll roads;
   2.7.2 This would be achieved through the development of a toll road network in Gauteng;
   2.7.3 If an existing freeway was to be tolled it had to be upgraded first;
   2.7.4 This would be the first urban freeway system in South Africa; and
   2.7.5 Due to practical engineering constraints the toll collection had to be done electronically.

2.8 A business plan and draft legislation was developed and presented to the Provincial Executive Council and Legislature in 1998 (Gauteng Toll Road Strategy) and 2003 (Gauteng Toll Road Bill).

2.9 Legally the only entity that was allowed to build and operate toll roads was SANRAL.

2.10 A joint plan was developed with SANRAL, which identified the top 20 class 1 provincial freeways as the bases for the freeway improvement programme.

2.11 Government tolling through Private Project Finance (loans) was found to be the most suitable and preferable.
3 Impact of Phase 1A of the Gauteng Freeway Improvement Plan

3.1 The tolling of GFIP Phase 1A is based on the following:

3.1.1 user-pay principle where only people using the facilities pay for the use of the road (a per-km tariff);

3.1.2 Large discount in the tariffs and the capping of the maximum monthly amount payable to R450.00 for motorists using e-tags;

3.1.3 Exemption of toll-fees for public transport vehicles (taxis and buses); and

3.1.4 Shielding the poorest of the poor against additional taxes for providing infrastructure that they don’t use.

3.2 Current usage of the e-toll system

3.2.1 ±1 400 000 registered e-tag users.

3.2.2 ± 45 000 taxis and buses (exempt vehicles – paying no tolls).

3.2.3 ± 2 500 000 daily.

3.3 Method of tolling

3.3.1 Electronic tolling is the only method that can be used to toll a urban freeway system, due to:

3.3.2 Does away with dedicated priority high occupancy and public transport lanes – increases traffic flow;

3.3.3 No delay at toll gates (toll gate can handle 200 vehicles per hour vs lanes can carry 2 000 vehicles per hour); and

3.3.4 Can institute differential fares for different types of vehicles, different times or special events or dates.

Current monthly fees payable

![Graph showing current monthly fees payable with percentage users and different fee brackets.]
3.4 GFIP additional Benefits

3.4.1 GFIP e-toll system has added benefits:

3.4.1.1 An Intelligent Transport System (ITS) that optimises the operation of the system and minimises delays due to accidents and incidences on the system;

3.4.1.1.1 SANRAL’s i-traffic website - www.i-traffic.co.za is a traveller’s information service that provides the status of traffic conditions, road works and traffic alert information on the Gauteng freeway network.

3.4.1.2 Incident Response Unit:

3.4.1.2.1 Traffic management at an incident;
3.4.1.2.2 Avoids secondary incidents;
3.4.1.2.3 Protect casualties & their property;
3.4.1.2.4 Offer basic life support & medical assistance through a Basic Life Support paramedic; and
3.4.1.2.5 Clear-up minor debris.

3.4.1.3 Motorcycle Medical Response Unit:

3.4.1.3.1 Rapid medical response through a Basic Life Support paramedic; and
3.4.1.3.2 Use of motorcycles during traffic congestion.

3.4.1.4 Light towing and Recovery Unit:

3.4.1.4.1 Moves stranded and accident damaged vehicles to a safe area outside the roadway; and
3.4.1.4.2 Re-instates the normal flow of traffic faster, limiting delays.

3.4.1.5 Heavy towing and Recovery Unit:

3.4.1.5.1 Moves stranded and accident damaged heavy vehicles to a safe area outside the roadway; and
3.4.1.5.2 Re-instates the normal flow of traffic faster happening.

4 e-tolls Court Challenges

4.1 SANRAL has been taken to Court on the following issues:

4.1.1 The Minister had not applied his/her mind to the business case of implementing the e-tolls as part of GFIP before the legislation was passed;
4.1.2 The method of electronic fare-collection is not the right choice as it is inefficient and expensive;
4.1.3 There has been fraud and corruption in the procurement process around the e-toll project; and
4.1.4 The choice of tolling the network was wrong.

4.2 The Courts have found all these cases in favour of SANRAL and as a result of these findings the GFIP e-toll system was instituted in December 2013.
PRASA MODERNISATION FACTS

INTRODUCTION

Our vision as PRASA is to be South Africa’s leader in the provision of quality passenger services. This vision is driven by a strong mission to strive for high-quality passenger service through service excellence, innovation and modal integration.

Commuter rail travel is PRASA’s most significant market. It moved 528 million passengers in 2013 and, in doing so, it made a major contribution to the economies and society of Gauteng, the Western Cape, the Eastern Cape and KwaZulu-Natal (KZN). There are some fundamental issues affecting the delivery of this rail service due to the three-four decades of underinvestment in the rail sector. If these are successfully addressed, it will transform the level and quality of service that we provide and strengthen rail’s role in the local transport network. This in turn will only further increase rail’s impact on the economies of these provinces and the economic wellbeing and welfare of its population.

We will achieve our strategic vision by creating an enhanced and more passenger orientated rail service that maximises the benefits from our planned investment in the passenger railway through:

- rail infrastructure renewal and modernisation;
- delivering transformational timetable changes in terms of speed and frequency to strengthen rail’s role in the integrated transport network and better respond to demand growth and the needs of users;
- introduce new rolling stock with an appropriate on-train environment to the journey being made by passengers;
- introducing a more user friendly and under stood timetable operating at regular intervals with off-peak services too;
- providing more flexible ticketing and a revised premium offer;
- improving integration between passenger rail services and other transport modes to support rail’s key role in the transport network and supporting emerging growth patterns in some provinces;
- strengthening passenger safety and security;
- enhancing station facilities;
- introducing selective infrastructure enhancements where these are really required to support demand growth and changes to services such as higher speed running; and
- introducing network extensions to support urban growth or fill gaps in the current network where rail is the most appropriate mode.

Rail Modernisation

PRASA is currently engaged in a major modernisation drive to improve the quality of service within passenger rail and position rail as the backbone for public transportation. In fulfilling its modernisation drive, PRASA has embarked on key Capital Investment Programmes around Rolling Stock Renewal, Station Modernisation, New Signalling, Depot Modernisation and infrastructure upgrades.

- Rolling Stock Renewal: PRASA has intensified its effort to procure approximately 7 224 new rolling stock with projected investment of R123 billion over estimated period of 20 years. The procurement of new rolling stock is a critical component of PRASA’s mandate to provide for modernisation and growth. Gabela Rail Transport Consortium has been appointed for Phase 1, i.e. to supply 3 600 new Metro Rail coaches at a cost amounting to R51 billion over a 10 year period. First trains are expected to be rolled out in 2016.

- Signalling Renewal: PRASA has embarked on a process to replace all existing signalling interlocking, which consist mainly of obsolete mechanical and electro-mechanical systems, with electronic interlocking as the technology of choice. Siemens has been appointed for the Gauteng Region. The project also includes construction of new train control centre in Kalfontein.

- Station Modernisation: A total of 134 stations have been prioritised for the Station Modernisation Programme over the next 10 years.

- Depot Modernisation: The Depot Modernisation project is aimed at designing and constructing fully functional modern maintenance depots that will be able to support and service PRASA’s new rolling stock.

- 120kh Perway Project: The project focusses on improving perway (rail tracks), pedestrian bridges, and drainage around the tracks to name a few. The improved perway will enable trains to run at speeds of up to 120 km.

- Operational Improvements: The implementation of strategic short term operational interventions is currently under way. These include measures to improve travel time, reduce overcrowding, implement clock-face / regular interval timetables, increase securitisation of passengers and assets, and improving operational safety.

Benefits of Rail

Passenger rail networks offer many benefits, such as; high capacity services, environmentally friendly, less land requirements, permanence / attract investment, reduce car & fuel reliance etc. Research (Todd Litman,VTPI, 2012) has shown that cities with large, well established rail systems have significantly; higher per capita public transport ridership, lower average per capita vehicle ownership and annual kms, less traffic congestion, lower traffic death rates, lower household expenditures on transportation, and higher public transport service cost recovery than otherwise comparable cities with less or no rail services.

South Africa, as with the rest of the world, particularly developing countries are experiencing rapid “urbanisation”. It is no coincidence that at the same time we see the revival of rail across the world to meet the growing transportation demand in a sustainable way.

An integrated Transport System with rail as the backbone is considered the most sustainable transport solution to respond to the significant population growth / urbanisation that Gauteng will be experiencing. PRASA is aiming to double its current modal share during this period.

Rail as the Backbone of the Transport System in Gauteng – Sustainable Transport Solution

In terms of recent studies (World Bank, Gauteng Spatial Development Framework-2010, and the Gauteng 25 Year Integrated Master Plan), Gauteng is expected to experience significant population growth over the next 20 years. These studies also recognise the importance of commuter rail as the backbone of the transport system.
1 PURPOSE
This document has been compiled in order to encourage discussion and debate around the tolling of Gauteng’s highways, and particularly the tolling technology employed, in terms of sustainable development.

2 DISCLAIMER
This document focusses on the tolling of Gauteng’s highways, and particularly the tolling technology employed. It does not consider, endorse or in any way provide an opinion on the current e-tolling business model or how the concept was initiated, motivated, developed, rolled out, communicated, implemented, tendered, financed, etc.

3 BACKGROUND
Although the department has had some interest in e-tolling purely from an environmental impact management perspective that focussed solely on the Gauteng highway upgrades (i.e. the construction-related impacts, not the concept of tolling), the e-tolling issue became a specific focus in late 2011 – early 2012 due to concerns around the level of public outcry against e-tolling.

This concern was focussed on the possible negative impacts on environmental governance and the use of certain regulatory instruments that could result from a successful popular public campaign to outlaw e-tolling.

A departmental Quarterly Environmental Threat, Weakness and Opportunity Scan (QETWOS) Issue Key Data Sheet on E-Tolling dated March 2012 describes this issue as follows (extract from Key Data Sheet):
E-tolling remained on the QETWOS watch-list to the time when the Supreme Court of Appeal dismissed OUTA’s appeal against e-tolls in October 2013. However, it is clear that the issue has not been fully resolved with the full implementation of E-tolling and that the risk identified in the QETWOS still persists.

4 E-TOLLING, AIR QUALITY AND CLIMATE CHANGE MITIGATION

Greenhouse gases (GHG) emitted by the transport sector currently account for just under 10% of South Africa’s contribution to global climate change. However, without mitigation measures, emissions from this sector almost triple from the current, already substantial, just under 50 million tons (Mt CO2e) to 137 Mt CO2e by 2050 (DEA’s Mitigation Potential Analysis (MPA), 2013).

Given the significance of this sector to global climate change, the department’s work around various mitigation potentials included work focussed on the transport sector where a range of potential mitigation measures were identified that could potentially be applied to the transport sector to deliver emissions reductions by 2050. These mitigation opportunities were categorised into the following types: Modal shift; Demand reduction measures; More efficient vehicle technologies; More efficient operations and Alternative lower-carbon fuels.

The analysis concluded that if all technically available mitigation potential in the Transport sector was implemented, the GHG emissions could be reduced by 11,869 kt CO2e in 2020, 39,525 kt CO2e by 2030 and 117,151 kt CO2e by 2050.

Of the various mitigation options explored, two categories were very significant, namely modal shift and more efficient vehicle technologies accounting for 77% of the 2020 savings listed above and culminating in potential savings of 66,082 kt CO2e by 2050.

Given the above, it is not surprising that South Africa’s National Climate Change Response Policy (2011) notes that one of the three “…mitigation options with the biggest [medium-term] mitigation potential [is] …promoting transport-related interventions including transport modal shifts (road to rail, private to public transport) and switches to alternative vehicles (e.g. electric and hybrid vehicles) and lower-carbon fuels.”

In this regard, it is internationally recognised that tolling is an economic instrument that can efficiently and effectively encourage the transport modal shifts contemplated by the Policy.

In essence, other than being used merely as a road building and maintenance cost-recovery method, tolling could also be used to contribute to the internalisation of the typically externalised climate change costs of fossil-fuel powered transport. Typical of this internalisation of costs is a behavioural response that results in a switch to cheaper transport options like car-pooling and public transport – both far more climate friendly options than the single occupant vehicle which is the norm for much of the traffic on Gauteng’s motorways.
Thus, although not specifically referenced in the climate change policy, tolling is broadly regarded as being a means of encouraging environment-friendly behaviour changes envisaged by the policy, namely, transport modal shifts (road to rail and private to public transport).

Also, although never formally expressed, with the Gauteng road upgrade being so closely associated with the development of the Gautrain in the run up to the 2010 Soccer World Cup, the e-tolling initiative was often regarded as being a practical and high-profile implementation of this policy intention by many in the department.

But greenhouse gases (GHGs including CO₂, CH₄ but particularly N₂O) are not the only emissions that are positively impacted by transport modal shifts from road to rail and from private to public transport, vehicle emissions are also significant sources of other air pollutants including CO, NOₓ, TOC, NMTOC, benzene, lead, acetaldehyde, formaldehyde, 1.3 butadiene emissions in all conurbations. This sector also contributes approximately 30% to total fine particulate and SO₂ emissions from fuel burning processes. From an air quality perspective, emerging air pollution issues are closely associated with the transportation sector, particularly road transportation. Indeed, there have long been fears that the growth in vehicle activity and the aging of the national vehicle parc is projected to offset planned and proposed national emission reduction measures aimed at the regulation of fuel composition and new vehicle technology. The significance of vehicle emissions in terms of the contribution to air pollutant concentrations and health risks is enhanced by the low level at which emissions occur and the proximity of such releases to high exposure areas. Vehicle emissions also tend to peak in the early morning and evenings at which time atmospheric dispersion potentials are reduced.

The dispersed nature of vehicular air pollution sources makes it difficult for monitoring and enforcement authorities to target each source, emphasising the need to use a mix of technical and non-technical measures. Technological advancements progressively reduce emissions from new vehicles through improved vehicle and fuel efficiencies. International experience has shown that purely technology-based solutions are not adequate for addressing traffic emissions, with behavioural factor related to car ownership and use of personalised vehicles also having a major influence. Vehicle emission reduction strategies typically also encompass non-technical measures such as the implementation of transport demand and supply management measures that reduce the incentive for using personal vehicles and promote the use of public transport – again the transport modal shift promoted by the climate change policy.

Although SANRAL can probably provide data on traffic volumes and volume growth prior to tolling and after tolling that could indicate the possible reduction in vehicle numbers resulting from people car-pooling or modal shifts, anecdotal evidence appears to indicate that e-tolling may be encouraging the desired passenger modal shift. Furthermore, although supporting evidence could be provided by Gautrain in respect to passenger numbers and growth trends prior to tolling and after, anecdotal evidence also appears to indicate that e-tolling may be encouraging the desired passenger modal shift.

Although the department is not in possession of this data, such data could also be used to estimate reductions in fuel usage (and the associated positive impact on our balance of payments from saving in imports of petroleum products) as well as GHG and other pollutant emissions. Furthermore, it may be possible that trends in vehicle emissions could also be assessed from data from the Johannesburg Metro’s Buccleuch Air Quality Monitoring Station.

Furthermore, SANRAL could also provide data in respect of “toll-free” public transport use, e.g. whether more buses and taxis are using the e-toll routes.

But getting people out of their private cars and into car-pools and public transport is not the only way that e-tolling may be having a positive impact on GHG and other air pollutant emissions. Indeed, SANRAL could also probably provide data on average journey speeds that may have improved due to reduced congestion. In this regard, unless these journey speeds are above the speed limits, reduced stop/start traffic flow has measurable benefits - fuel consumption increases with increased stop-start conditions, mainly because it takes relatively more energy to move a vehicle from a stationary position. Heavier vehicles in particular are prone to disproportionate fuel consumption and emissions. Most of the wasted fuel consumption, and associated emissions (CO₂, CO, NOₓ, SO₂ PM10, HCs, etc.), results from poor traffic management (congestion, poor intersection controls, illegal roadway blockages, etc.) estimated to be about 37% of the waste, and inefficient driving style (inefficient acceleration, poor gear change, etc.) estimated to be about 22% of the waste (Vreeswijk et. al, 2010). It has been shown that this wastage can be reduced through interventions that include improved traffic management practices, improved information to drivers and travel demand management measures.
As with modal shifts, while these wastages as a percentage of total fuel consumed or emissions may appear small in isolation, they are more pronounced and become significant when accumulated over the entire network and over an extended period of time.

5 POTENTIAL INNOVATIVE USES OF THE E-TOLL TECHNOLOGY

The installed e-tolling technology allows SANRAL to recognise individual vehicles from their registration plates and to use this to create and manage real time road usage databases, profiles and accounts for individual vehicle owners.

With this type of functionality, other benefits could accrue from the more nuanced and innovative use of the e-tolling technology. For example, using the system to enforce speed limits based on average speeds between gantries would encourage people to stick to speed limits for their entire journey and not just at speed traps. Reduced speeds again mean reductions in fuel usage, GHG and other pollutant emissions.

Given that e-tolling recognises individual vehicles, it is entirely possible that toll fees could be associated with a vehicles’ fuel efficiency (like our current vehicle GHG emission tax on new vehicles) further encouraging the environment-friendly behaviour change of shifting to smaller, more fuel-efficient vehicles. As noted above, improved vehicle efficiency is one of the most significant means of reducing transport sector GHG emissions. Furthermore, tailored tolling could be used to incentivise the use of electric vehicles with no vehicular GHG or other atmospheric emissions.

Finally, although not made public for obvious reasons, the e-tolling vehicle recognition technology could be, if it is not already being, used in crime prevention as a vehicle known to be used by criminals can be detected and tracked in real time on Gauteng’s motorways.

6 THE ALTERNATIVE TO E-TOLLING

Although not specifically an environmental issue, one could argue that social justice lies at the heart of sustainable development. With this, if we were to cover the cost and maintenance of Gauteng’s excellent motorways through a general increase in the fuel levy rather than through e-tolling, as many of the most outspoken e-toll critics suggest, people like poor rural farmers struggling to get their meagre produce to market on often impassable roads will be effectively subsidizing users of the best roads in Africa. Furthermore, there is no doubt that users of Gauteng’s motorways will be gaining an economic benefit from these roads (reduced travel time, reduced fuel costs, etc.) that will not be directly shared with those who do not have the privilege of using these excellent roads.

Surely this is neither fair nor desirable. Indeed, despite the anti-e-tolling sentiments expressed by some organised labour organisations, some people regard the e-tolling outcry as a classic bourgeois issue motivated by attempts to protect privilege.