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SOUTH AFRICAN LOCAL GOVERNMENT ASSOCIATION
SALGA
Inspiring service delivery

SALGA comments: IRP base case
Submission – Building a local government scenario
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Contents

The DoE/IRP2016 team has invited the public to submit scenarios to the IRP process. A scenario formulated according to the guideline/method below is thus to be submitted to integrate the Local Government position. This is based on documents submitted by SALGA to DoE during the consultation process:

- SALGA comments: IRP base case Submission - Summary of key messages and priority requests (2pp)
- SALGA comments: IRP base case Submission – Executive summary (6pp)
- SALGA comments: IRP base case Submission – Detailed Analysis (24pp)

An important aspect of these documents was the need for active engagement with municipalities representing over 40% of demand and the need to see local government as a crucial source of knowledge, data and expertise for planning and for implementation, representing a substantial potential set of resources of the electricity industry, and other energy service industries and investors including technical, organisational and investment resources.

Thus, while the DoE/IRP2016 team could possibly use the information submitted as a guideline to populate a Local Government scenario with numbers, it is strongly requested that the IRP2016 team work with a SALGA/municipal team to compile the details of the scenario and to build the capacity of South Africa to strengthen our collective capabilities to develop and maintain the IRP as the 'living' plan it is required to be, especially in the highly dynamic electricity sector which is undergoing rapid, fundamental (r)evolution.

PROPOSAL ON HOW TO CONSTRUCT A LOCAL GOVERNMENT SCENARIO

In essence, the suggestion is to remove the municipal demand from the Base Case low demand forecast and replace with new demand forecasts derived from bottom up considerations of municipal demand. The municipal demand forecast will be essentially based on (A) fundamental changes already occurring and which will possibly occur at distributor level and (B) least cost consideration from the municipal and customer perspectives.

These new disaggregated demand forecasts involve: (i) lower customer electricity demand (owing to price elasticity and tipping points) from mid-high income customers, including domestic, commercial and industrial; (ii) significant customer own-supply/feed-in, (especially from 2025 onwards); (iii) significant distributor own supply (DOS), both embedded in distributor networks and wheeled through the transmission network. See below for more details on these 3 points.

When bottom-up demand forecasts have been formulated, they are then aggregated (according to their current sizes and projected population/GDP growths) and added onto the 'low' demand forecast for non LG demand used in IRP2016 modelling.

<u>Important to note, especially when facilitating such input</u>: The demand is not a prediction, i.e. it is not saying what is most likely to happen, and thus that is not the reasoning to be used in formulation. It is ONE plausible scenario, to assure that in compliance with basic requirements of prudent scenario planning a full range of plausible scenarios is used to design and assess the robustness of the final policy adjusted plan. This scenario is thus one that requires least demand from the centralised generation technology system and will thus involve most innovation and evolution at the local level.

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Very few municipalities have demand forecast data… how to proceed?

For this iteration of the IRP, bottom-up demand of at least the 6 biggest metros should be considered**.** If possible initiate discussions with the biggest 12 cities (8 metros + 4 secondary cities). In the meantime, keep demand from the other municipalities as is, taking into account the comments on demand provided in SALGA's comment, including price elasticities.

For the next iteration of the IRP, a bottom-up demand analysis could be extended to all municipalities. This will require a thorough support programme from a range of stakeholders.

This suggestion is based* on the fact that the 6 largest metros account for 27% of Eskom's total electricity sales (64% of Eskom's *municipal sales).* All metros and the four biggest secondary cities represent 34% of Eskom's electricity sales. These twelve cities, together with the Energy Intensive User Group, account for 70% of electricity sales in South Africa and 80% of its GDP.

It is likely that the dynamics in these municipalities will be similar to the bigger ones. It has been shown that poor management exacerbates the effects of external stresses on the electricity business. This means that the impacts of new technologies are likely to more severe in the case of smaller, typically weaker, municipalities.

**inputs from the Briefing Papers on Cities and Electricity, available on www.cityenergy.org.za*

1. Suggested adjustment of demand based on bottom-up, least cost supply

Firstly, domestic customers are categorised into 2 categories, 'low' and 'mid-high' and estimate forecasts for the number of customers in each category for 2015-2050 are made. Then, for the 'low' category, demand is maintained at present levels per connection, but total demand will depend on number of households/connections. For 'mid-high' and commercial and business/industrial forecast estimates incorporating (i), (ii) and (iii) below are carried out.

a. PRICE ELASTICITY AND TIPPING POINTS

Note: This mainly refers to energy efficiency and substitution effects that are relatively continuous with the past (see corresponding note in ii below).

Estimate 2015-2050 demand for domestic, commercial and industrial customer classes using: municipal electricity databases, status reports and plans, in conjunction with municipal expertise and incorporating insights from existing research.

a. While rough estimates might be needed, use a sufficiently significant impact of price elasticity of demand and tipping points

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b. In conjunction, explicitly consider a range of GDP / investment / growth forecasts. The government planning growth forecast tend to be in the overly optimistic range and it would be prudent to have scenarios that cover other paths.
c. If possible, access the Eskom load-research databases and analysis, and expertise, and other resources (SANEDI, CSIR, ERC, SEA, …)

b. CUSTOMER OWN-SUPPLY AND FEED-IN

Note: While customer own-supply/feed-in could also be considered a component of price elasticity of demand, it is separated out because of (A) its disruptive nature in terms of technology/cost features, customer behaviour (e.g. prosumer) and industry structure (enabling tariffs, smart-technology, …) and (B) convergence aspects (e.g. electric vehicles (EVs) –-a transport energy service—driving availability of storage, customer investment in PV and very innovative industry models such as new electricity suppliers investing in aggregating storage in EV-batteries as virtual embedded power stations). It is highly plausible that by the 2035 timeframe such developments could be substantial.

In addition to price elasticity, use retail grid parity to incorporate well-considered uptake rates of EE, SSEG and storage for own-supply and feed into grid by mid-high income customers (domestic) and commercial and industrial. This should:

a. Consider municipal electricity distributors' financial sustainability and tariff regimes to support ongoing affordable tariffs for the poor;
b. Be based on plausible "high" tariff path and lower bounds of SSEG, SSEG + storage and EE prices to achieve a "high SSEG, SSEG + storage and EE uptake path" until 2050.
c. Include EVs and their potential storage assets. Include highly functional load management and smart technologies.

c. DISTRIBUTOR OWN SUPPLY

Note: This includes both supply embedded in distributor networks and wheeled through the transmission network.

Use results of available municipal plans (consult with SALGA, municipalities and relevant stakeholders). Some of the municipal plans refer to significant investments in utility scale Wind or PV by the mid-2020s because these are shown to significantly reduce system costs, other include a range of mid-scale municipal own generation options which come with a range of local socio-economic benefits.

Also incorporate municipal GHG emissions targets and associated plans and include the principle that if electricity supply mitigation options are lower cost than mitigation in other sectors then the least cost mitigation option should be implemented.

It should be a central principle that if centralised generation technology system costs are higher than local solutions (translated to the customer retail tariff) that least cost solutions are implemented.

Examples of existing municipal energy plans:

- City of Johannesburg: approved an energy framework in February 2017. This plan estimates that 66% of the City's supply would come from the centralised grid by 2050, while the rest will be supplied by a range of distributed local solutions.
- City of Cape Town: has signalled its interest to source a substantial part of its supply independently from the centralised generation technology system and has developed electricity analyses similar to the IRP at the City's level.
- eThekwini Metropolitan Municipality: has also developed an energy plan (IRP methodology) and aims to increase distributed generation.
- City of Tshwane: is in the final step of developing a sustainable energy framework for the city, based on the City's energy profile and an analysis of possible future energy scenarios and their implications on city revenue.

2. Tariff impact assessments

In addition to scenario outputs as per the Base Case additional detailed outputs should include tariff impact assessments for all the main scenarios. These will include the transmission costs of the chosen technologies, amongst others. It will also attend to the issue that a central feature of South African energy services supply involves the starting points of large cross-subsidies and financial difficulties in LG electricity distributors. For expediting long term (2015-2050) scenarios these issues will need resolution. A starting point could be:
Evolution over ten years to full cost reflective mid-high income domestic, commercial and industrial customers
Poor customers to pay affordable tariffs. Subsidy sources will be important to resolve for scenarios.

Comparative tariff impact assessments should be conducted and if it appears necessary, adjust demand, especially grid-defection, as necessary.

Such an assessment should also analyse the tariff impacts on basic energy services and associated tariffs and cross-subsidies.