



27th Technical Convention 2019

The 4th Industrial Revolution (“4IR”) | *Building the Power Utility of the Future, Today*

The Impact of Small Scale Embedded Generation on Municipal Revenue

Presented by Tanaka Shumba
Project Coordinator
Sustainable Energy Africa

Hosted by



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Introduction



There has been an increase in the amount of SSEG installed in South Africa.

Advantages of SSEG systems to customers

- i. Reduced electricity bills
- ii. Reduced emissions
- iii. Increased customer choice

Advantages of SSEG systems to municipalities

- i. Cheaper electricity for reselling
- ii. Reduction of technical losses
- iii. Increased power system reliability



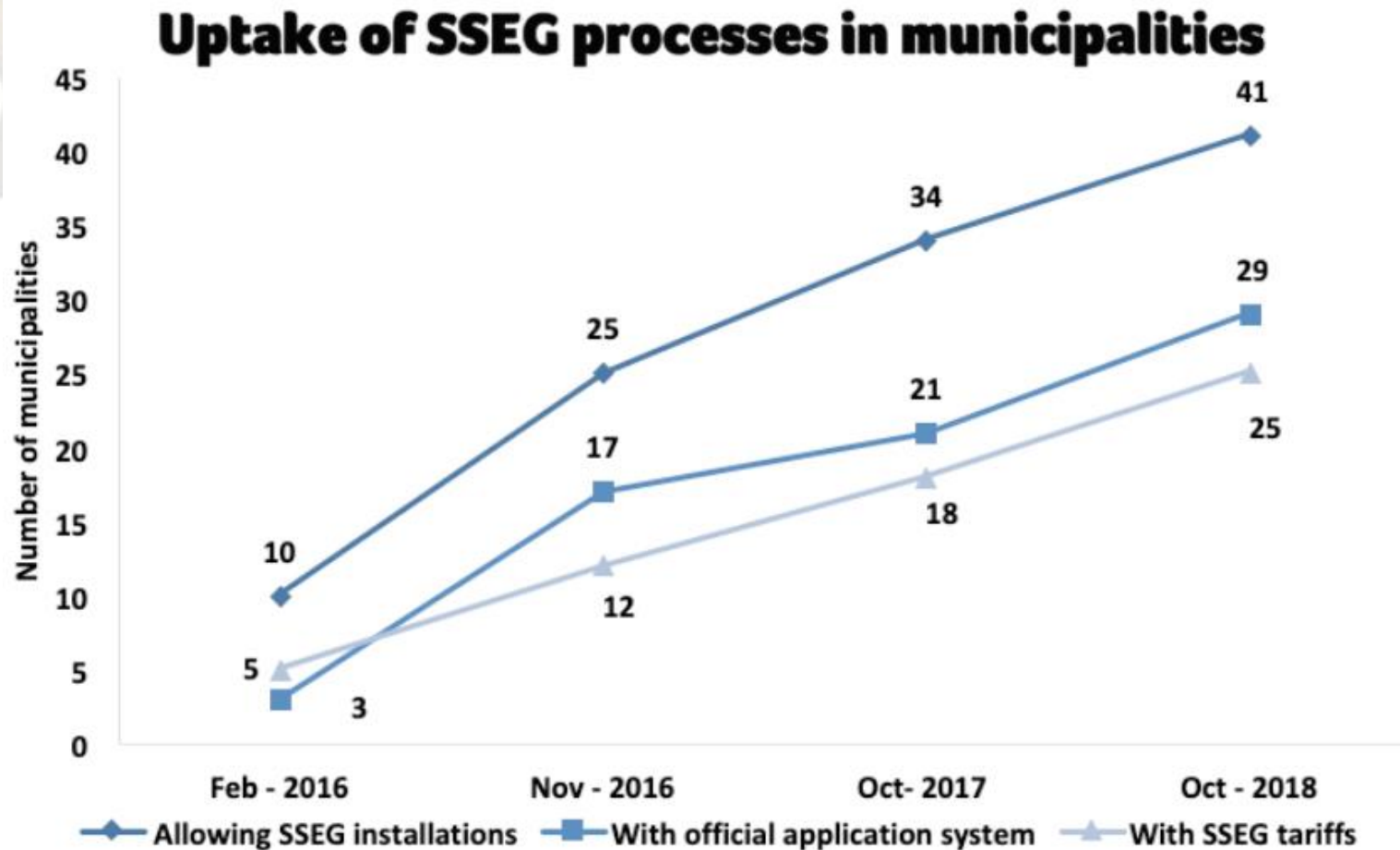
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Introduction



SALGA, 2018 , Status of Small-Scale Embedded Generation in South Africa

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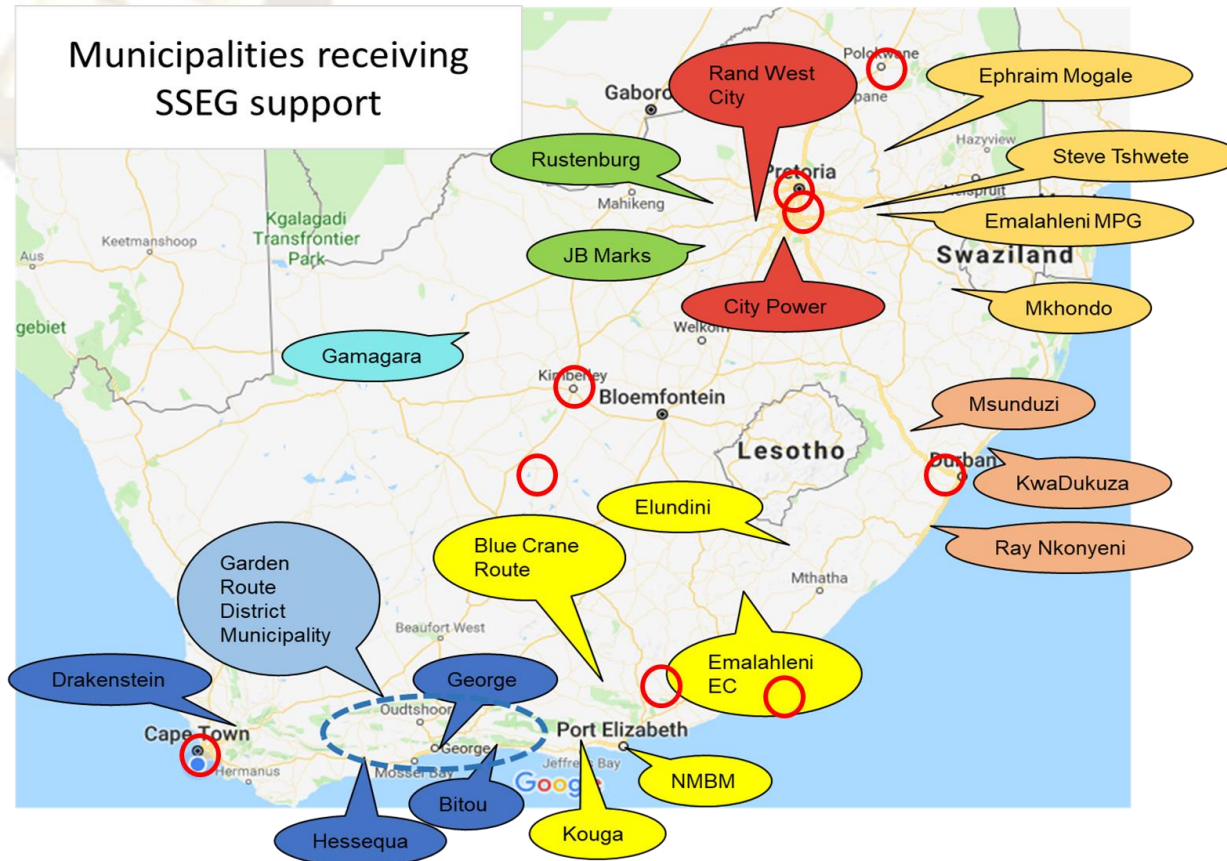
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Municipal SSEG Support Programme

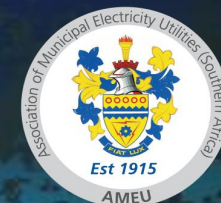
Programme includes **capacity building of staff** and **provision of template documents**.



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Municipal SSEG Support Programme



Policy
Requirements document
Specifies 1) what SSEG the municipality can install
2) what's allowed, application process

Application
Application form

Assessment process
Control doc
Checklist of all steps in assessing the application

Commissioning
Commissioning report

Metering
Guide
Bi-directional meter options

Tariffs
Tool & Guide
Tariff Setting guide and Revenue Impact analysis tool to enable proposal for on to

Contract
Contract
Contract between municipality and SSEG customers to set obligations of parties and billing arrangements

By-law
By-law text
Text to be used in municipal electricity by-law amendment to make policy legally enforceable

Record keeping
Template
Record of installed SSEG systems (facilitates info for NERSA)

Grid Impact Studies
Guide
How to assess SSEG applications where they exceed criteria in "Simplified connection criteria" of NRS097-2-3

Info for public
Examples
General information flyer/sheet for the layperson (e.g. can be included in rates bill)

Available on:
www.sseq.org.za

* Based on AMEU-SALGA Resource Pack



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SSEG Factors affecting Municipal Revenue

Reduction
in revenue

Decrease
in costs

Reduction in
sales volume

Compensation
for PV feed-in

Reduction in
bulk power
purchases

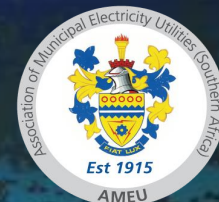
Reduction in
technical
losses

Cheaper
electricity to
on-sell

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SSEG Tariff Structures

Bundled Tariff:

- Costs incurred by municipality are charged as one volumetric charge (**c/kWh**).

Unbundled Tariff:

- Costs incurred by municipality are separated and charged as a fixed charge (**R/month**) and a volumetric charge (**c/kWh**).

- SSEG customers purchase less energy and therefore when a bundled tariff is utilised there is no guarantee that they will adequately contribute to the fixed costs of the network.
- It is advisable to utilise an unbundled tariff structure for SSEG customers to ensure that they pay their fair share of fixed costs.



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Revenue Impact of Residential SSEG



Non SSEG Residential

171 c/kWh (energy)

142-195 c/kWh (IBT* energy)

176 c/kWh (energy)

R 402 / month (fixed)
+ 154 c/kWh (energy)

Metro 1

Metro 2

Intermediary City 1

Intermediary City 2

Residential SSEG Customers

R 245 / month (fixed)
+ 171 c/kWh (energy)
- 74 c/kWh (export)

R 160 / month (fixed)
+ 142-195 c/kWh (IBT energy)
- 10 c/kWh (export)

R 380 / month (fixed)
+ 82-325 c/kWh (TOU* energy)
- 42-295 c/kWh (TOU export)

R 402 / month (fixed)
+ 154 c/kWh (energy)
- 154 c/kWh (export)

* IBT – Inclining Block Tariff

* TOU – Time of Use



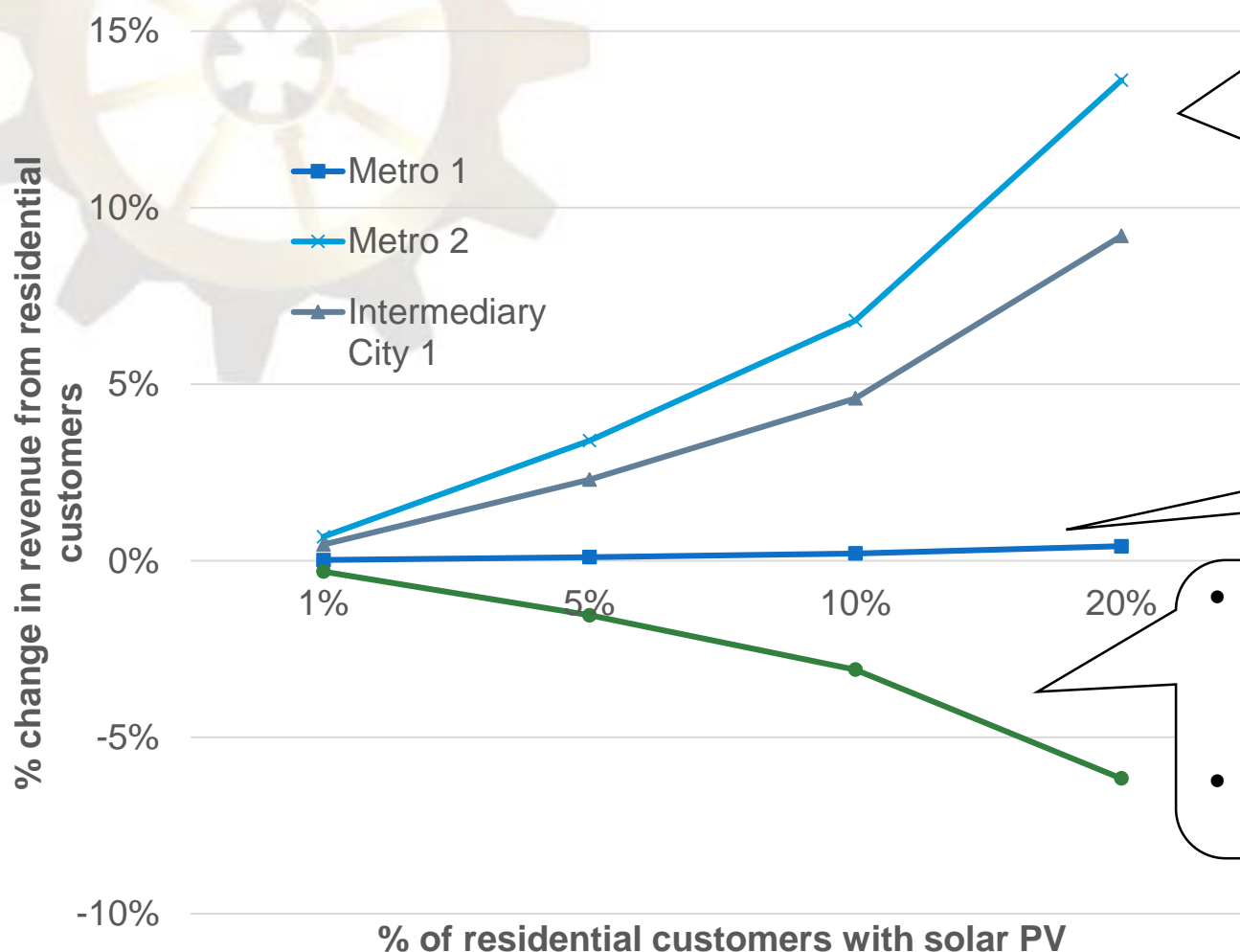
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Revenue Impact of Residential SSEG



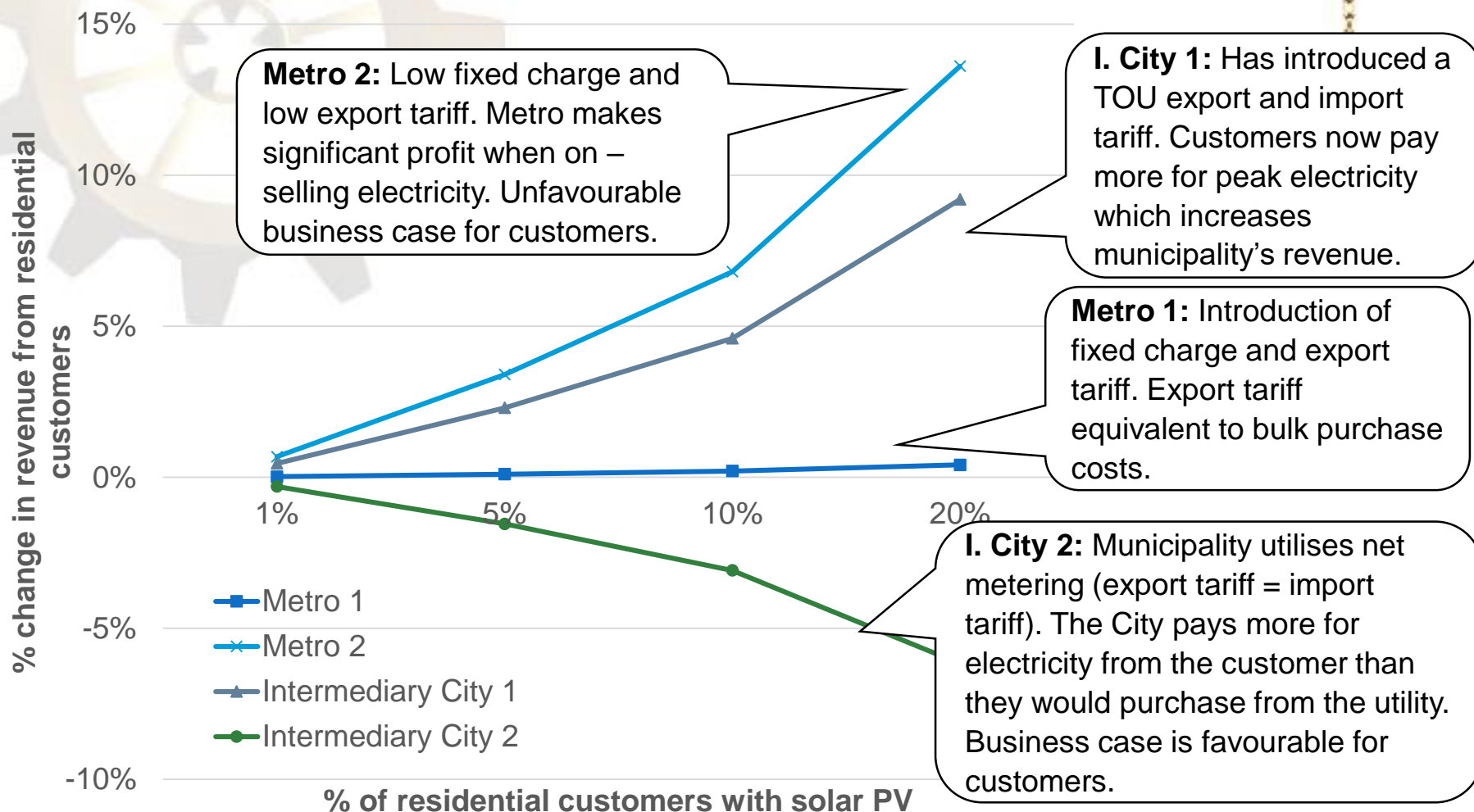
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Revenue Impact of Residential SSEG



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Residential SSEG Highlights



Key principle: COST REFLECTIVE TARIFFS

It is possible to protect revenue whilst ensuring a reasonable business case for customers.

Example of a sensible residential tariff:

1. Fixed charge of R200 - R400 per month
2. Energy charge same as before
3. Export tariff equals avoided costs = 60 to 80 c/kWh



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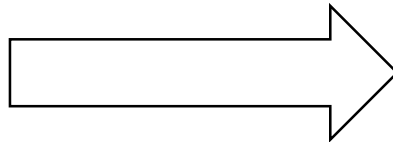
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Revenue Impact of Commercial SSEG

Normal Commercial Customers

Fixed charge (R / month)
+ Demand charge (R / kVA)
+ TOU energy charge (c / kWh)



SSEG Commercial Customers

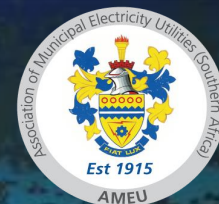
Fixed charge (R / month)
+ Demand charge (R / kVA)
+ TOU energy charge (c / kWh)
- Export tariff (c / kWh)

- Commercial customers are already paying a fixed charge and a demand charge.
- An export tariff is added to credit SSEG customers.

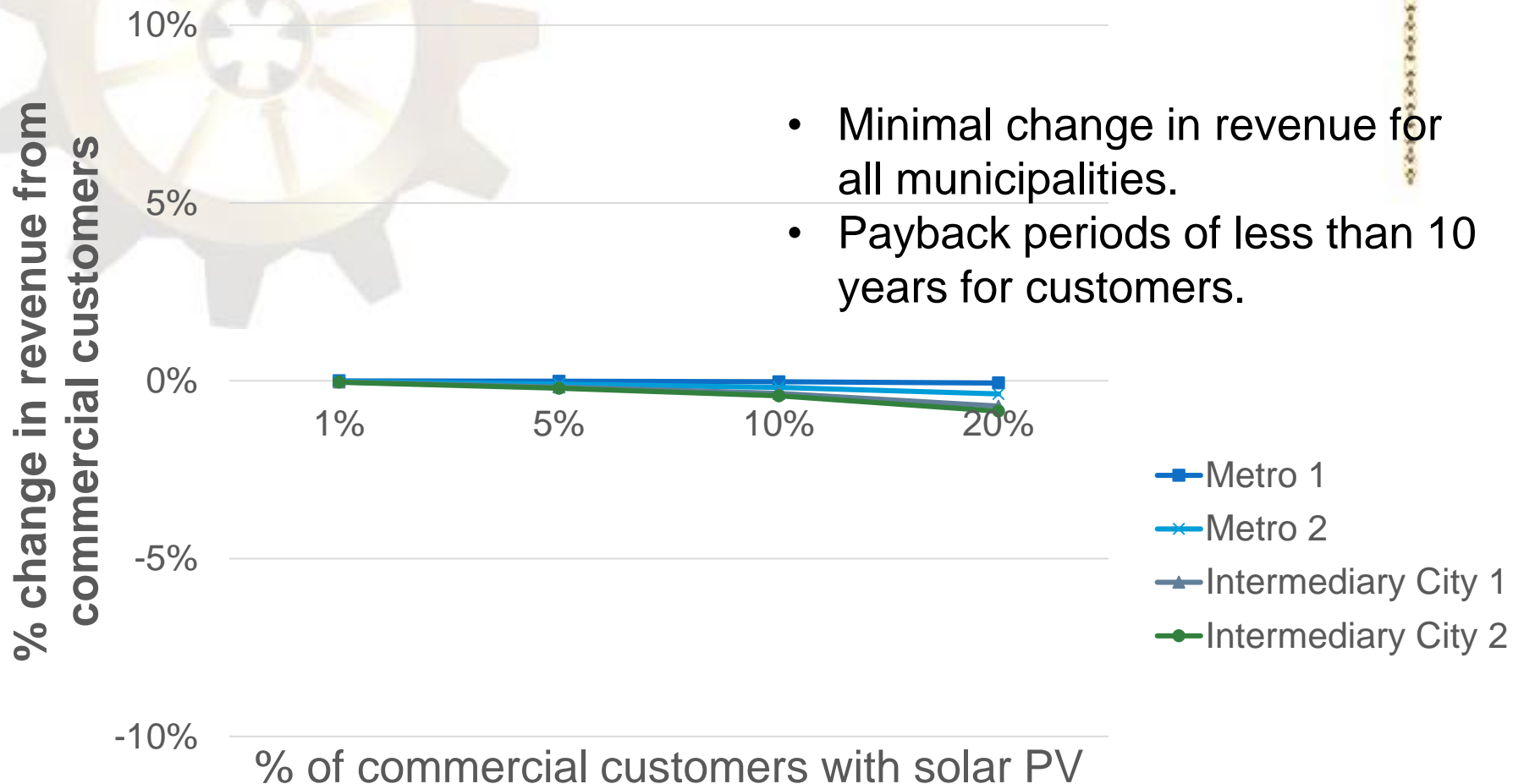
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Revenue Impact of Commercial SSEG



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Commercial SSEG Highlights

- Minimal revenue change when SSEG was implemented due to already existing separation of fixed network and variable energy costs.
- Commercial customers often consumed most of their kWh generated, thus the export tariff has less impact.



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Key Lessons



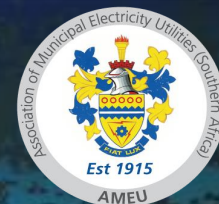
1. Rapid uptake of SSEG has the potential to impact municipal revenue.
2. SSEG tariff setting should be informed by a detailed cost of supply study.
3. Tariffs developed need to balance the interests of the municipality and its customers.
4. Municipal revenue can be protected whilst ensuring a reasonable business case for SSEG customers.



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Municipal SSEG Support Programme



INVITATION FOR MUNICIPALITIES TO APPLY FOR SMALL-SCALE EMBEDDED GENERATION SUPPORT

Technical and capacity building support is available for approx. 25 municipalities to help establish SSEG application and approval processes. Support will be provided through training for staff (5 days), on site capacity building, technical expert input and off-site support, amongst other mechanisms.

TO
APPLY

Hlengiwe@sustainable.org.za

OR

www.sseg.org.za

by 15 November 2019

In cooperation with:



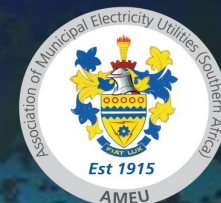
energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

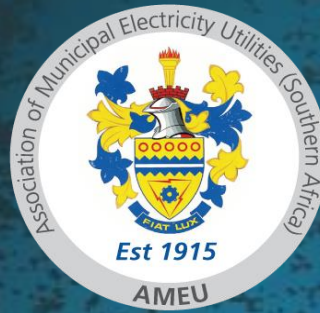


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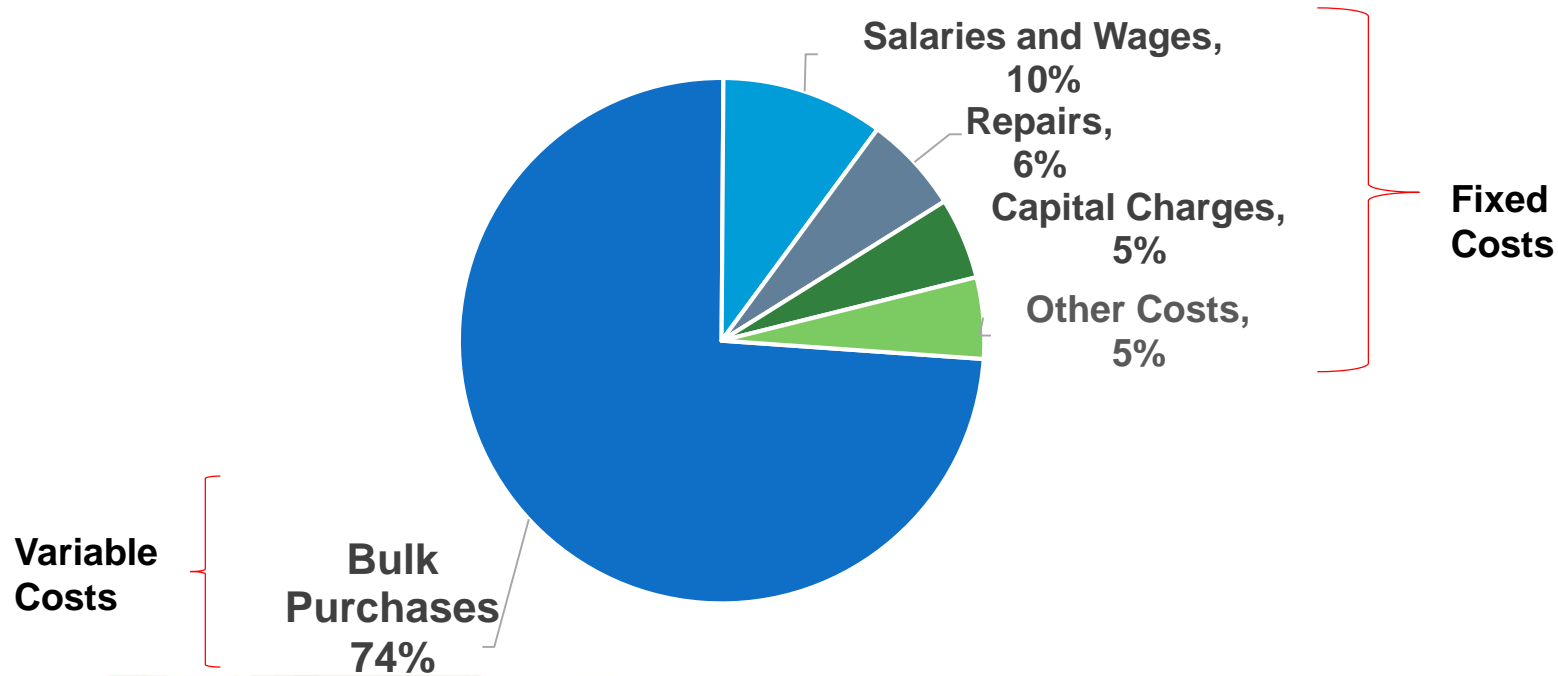
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Average Cost Structure of Municipal Electricity Distributor

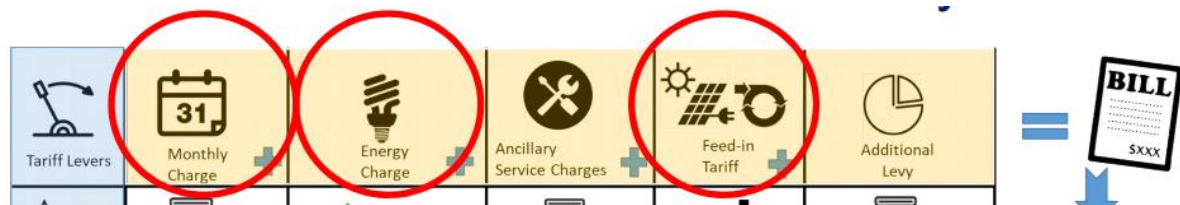


Average cost structure across various municipalities as determined from a survey of municipal D-Forms¹

1. NERSA, 2019

2. Municipal Council
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Building





The Importance of Cost of Supply Studies



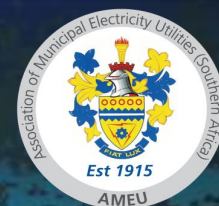
1. Municipalities need to be aware of the cost of providing electricity to customers.
2. To prevent municipal revenue loss it is important to ensure that **SSEG customers adequately pay for their costs.**
3. Tariff setting should be based on **cost recovery** rather than on revenue protection.



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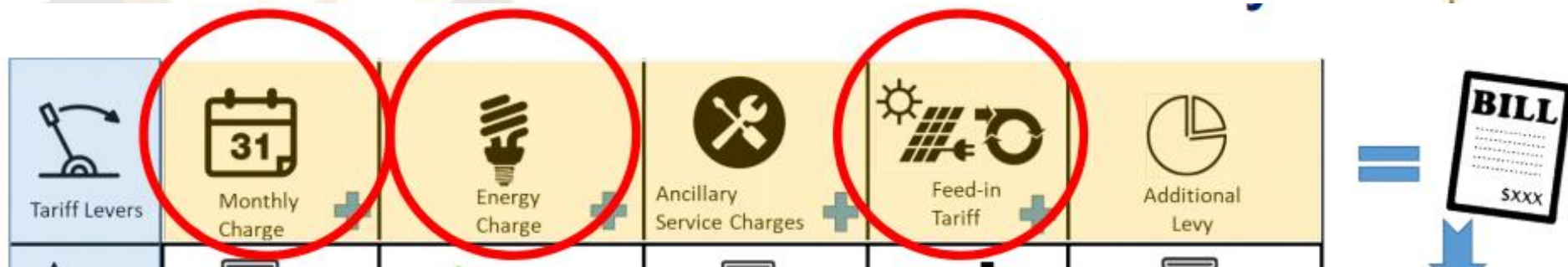
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Revenue Impact Analysis Methodology

SSEG Tariff Levers



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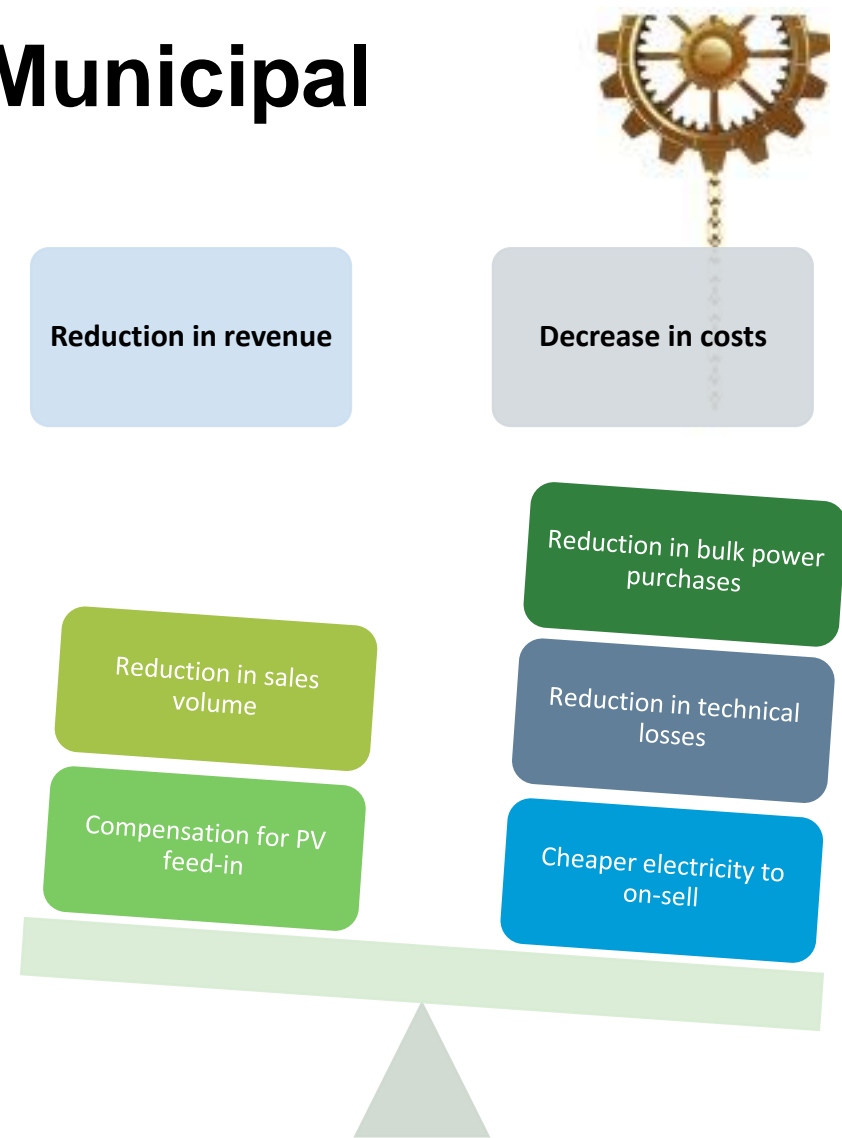
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SSEG Factors affecting Municipal Revenue

The introduction of SSEG could potentially result in a reduction in municipality's revenue due to:

1. Reduction in utility's sales.
2. Additional costs associated with the revamping of distribution systems to accommodate SSEG.
3. Compensation for electricity exported on to grid.



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