



68TH AMEU CONVENTION 2022

Durban International Convention Centre

2 – 5 October 2022

A JUST ENERGY TRANSITION ("JET") FOR SOUTH AFRICA

A Just Energy Transition Starts with JUST Tariffs

A Cost to Serve (CTS) Study at eThekweni Municipality

Presented by: Leshan Moodliar

Project Executive

eThekweni Municipality

Hosted by



"If you can't explain it simply, you don't understand it well enough."

Cost reflectivity in Africa

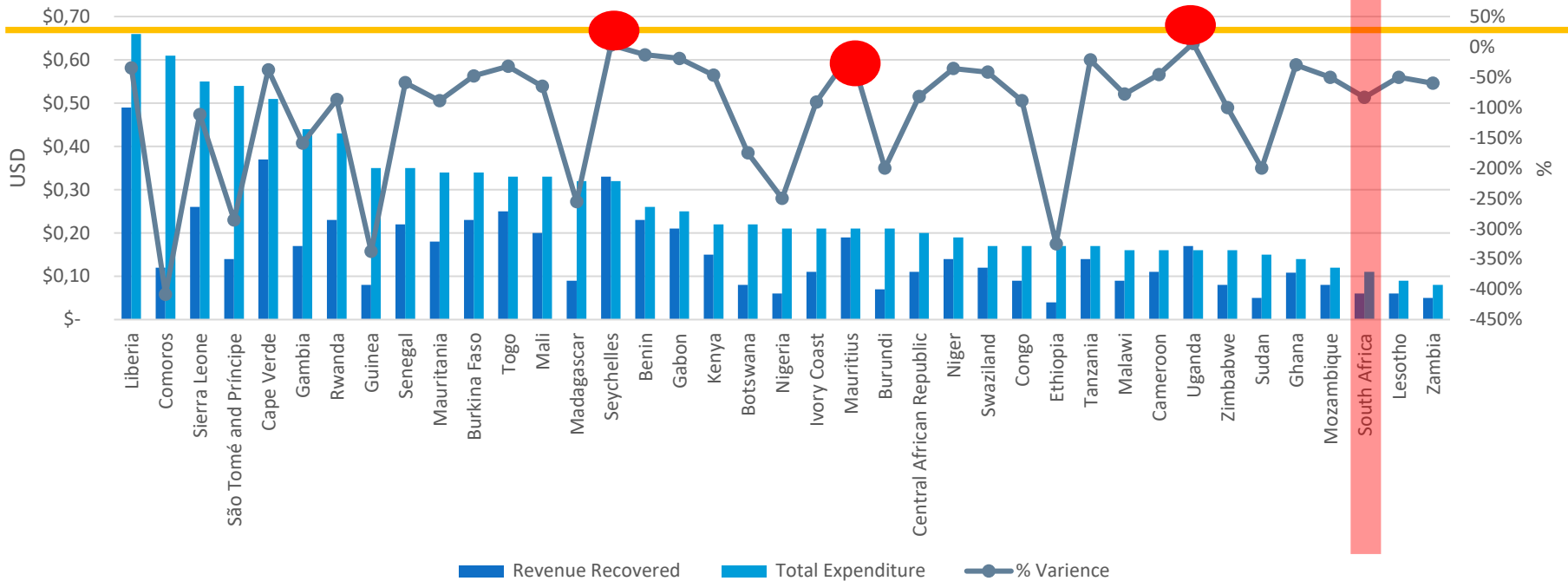
Why such a poor rate of reflectivity?

Why ?

Don't know how to do study ?

Country Cannot afford reflectivity?

Revenue Recovered Vs Expenses Per kWh - Yr : 2014 – WORLD BANK STUDY



Is cost reflectivity necessary?

Y N

Is cost reflectivity realistic & affordable?

Y N

Are all customers in South Africa ready for reflectivity?

Y N



THE PRICE PICTURE OF SA

■ Eskom average increase ▲ CPI

Working on Tariffs is exciting

Working on Tariffs is addictive

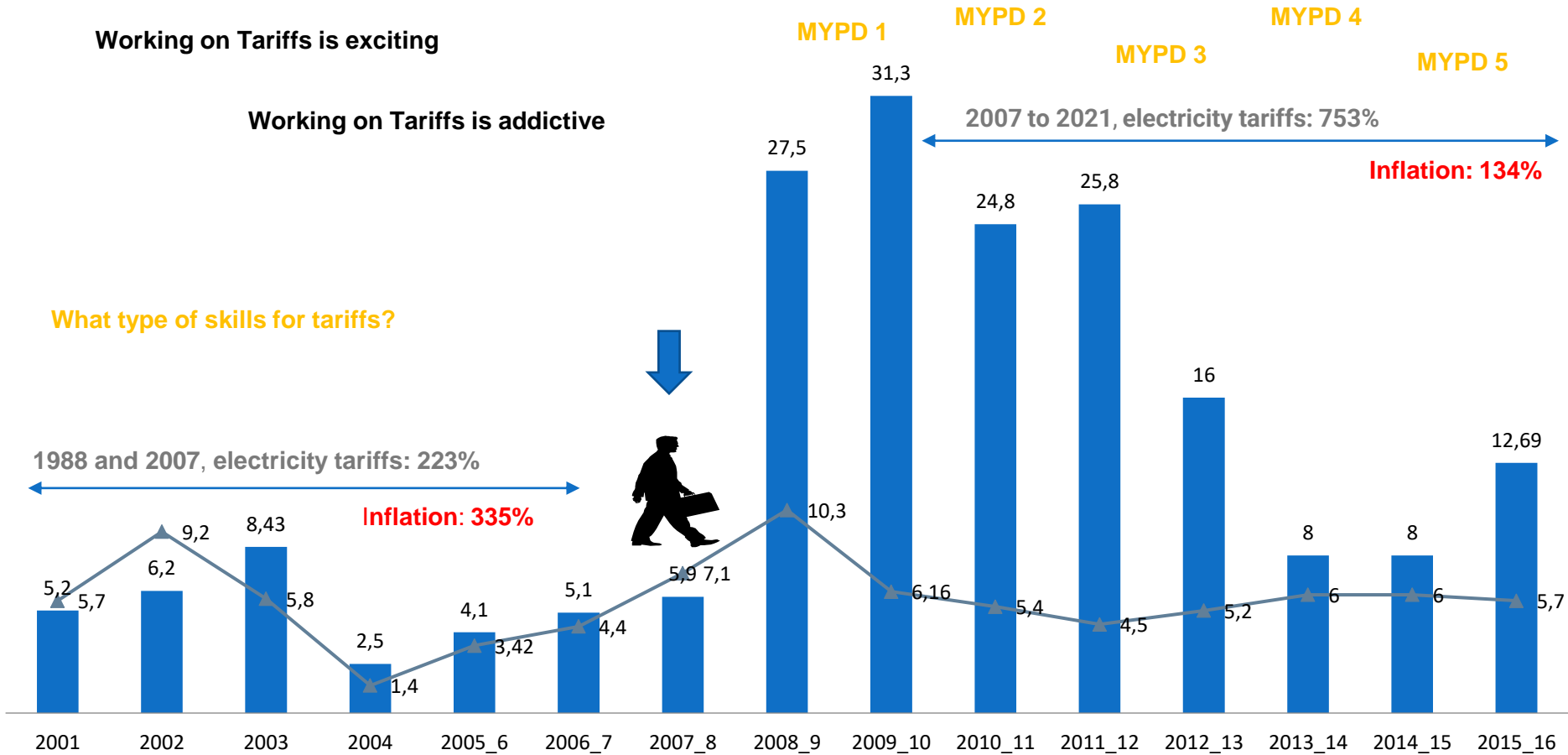
What type of skills for tariffs?

1988 and 2007, electricity tariffs: 223%

Inflation: 335%

2007 to 2021, electricity tariffs: 753%

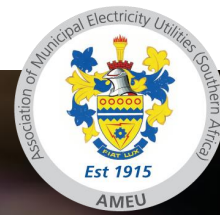
Inflation: 134%



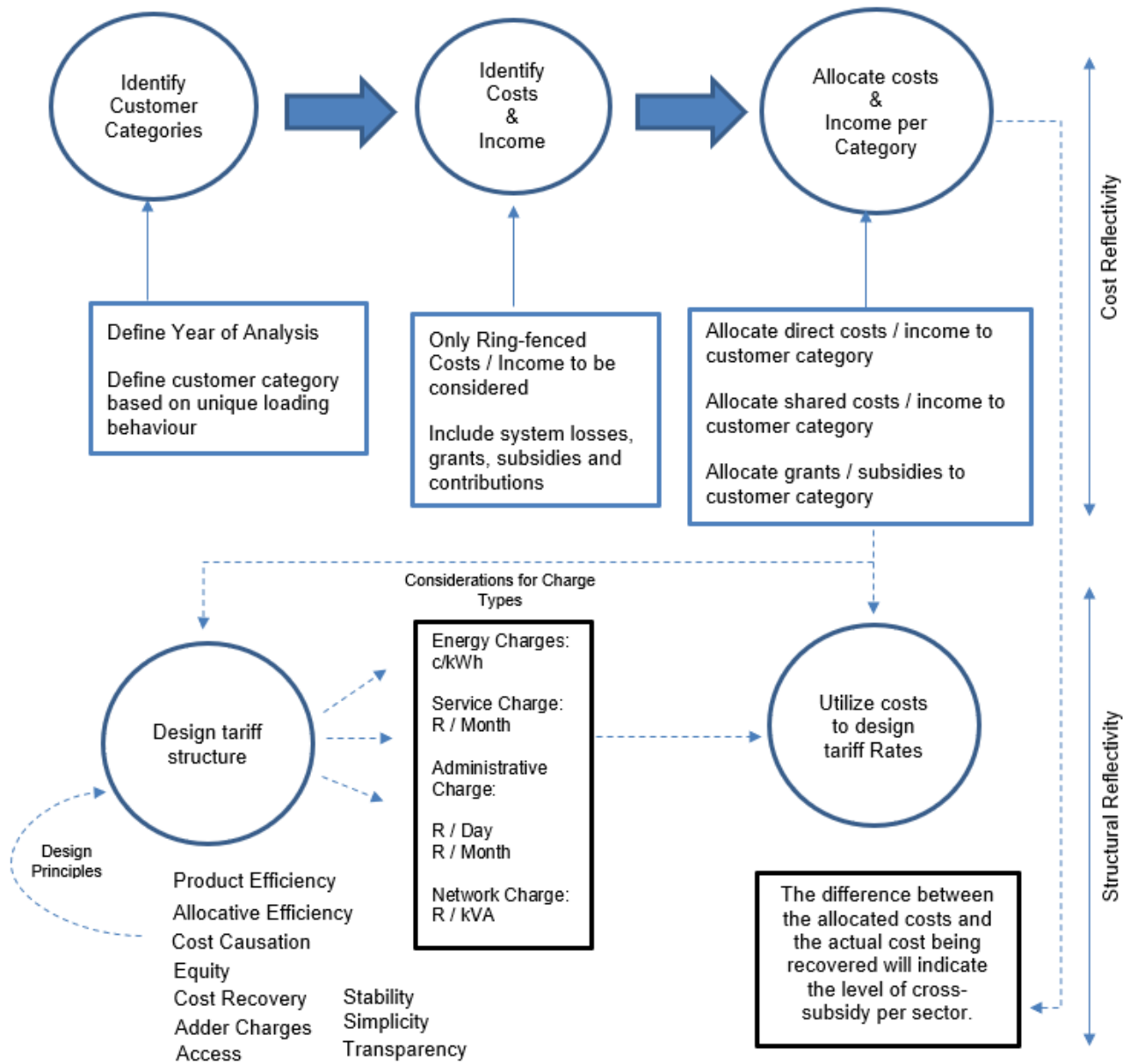
EVERYONE HAS AN OPINION ON TARIFFS – NEED A METHOD

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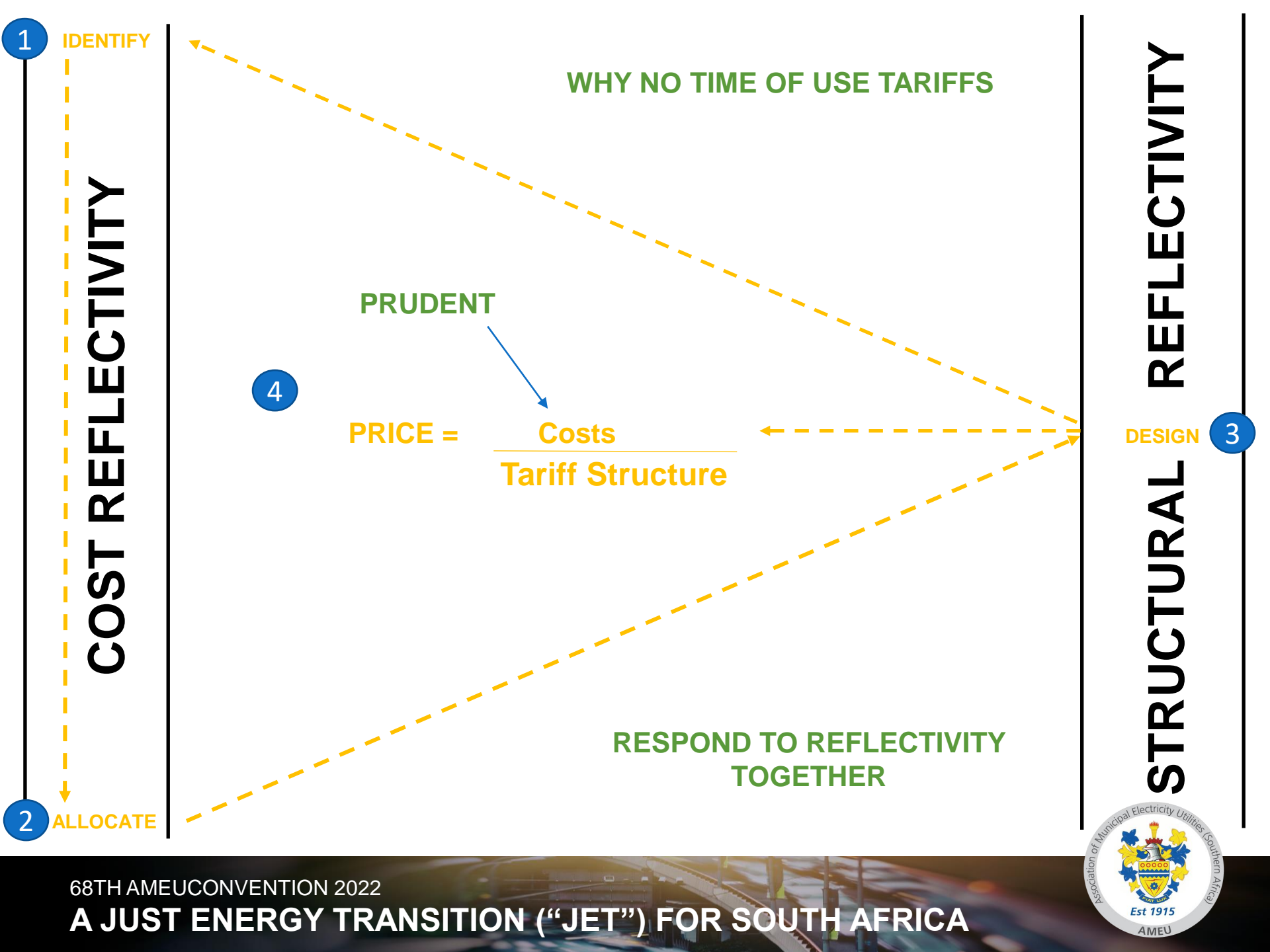
A JUST ENERGY TRANSITION (“JET”) FOR SOUTH AFRICA



IDENTIFY / ALLOCATE COST



TARIFF STRUCTURE DESIGN



COST REFLECTIVITY



Inter-Cross Subsidy between customer categories

If the customer category is recovering the costs as per the allocated costs, then the customer category is deemed cost reflective from a revenue perspective.

It also indicates that the customer category is not revenue dependent on other customer categories.

The cost allocation methodology's accuracy will influence the inter-cross subsidy level.

Cost is the amount of money incurred by the Municipality to provide a service. The better aligned the costs are to the customer category, the more cost-reflective the tariff is.

Intra-Cross Subsidy within customer categories

If similar customers within the customer category do not make the same contribution to the costs as the others, then the tariffs within the customer category are not deemed reflective. Therefore, this non-reflectivity indicates a subsidy between customers within the customer category.

The level of subsidy is generally influenced by the nature of the tariff design and how different costs are priced and recovered.

The pricing methodology for the recovery of the allocated costs will influence the level of intra-cross subsidies.

Structural Reflectivity

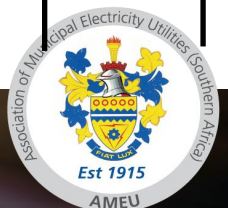
The manner in which customers are charged for the electricity service will dictate the level of structural reflectivity of the tariffs.

A tariff designed to follow the cost causation principles through the pricing will lead to a high level of structural reflectivity.

Contrary, a tariff where the pricing mechanism does not follow the cost causation attributes will have a low level of structural reflectivity.

Electricity is sold to customers via tariffs. The better aligned the tariff is to the cost causation attributes, the more reflective the tariff becomes.

STRUCTURAL REFLECTIVITY

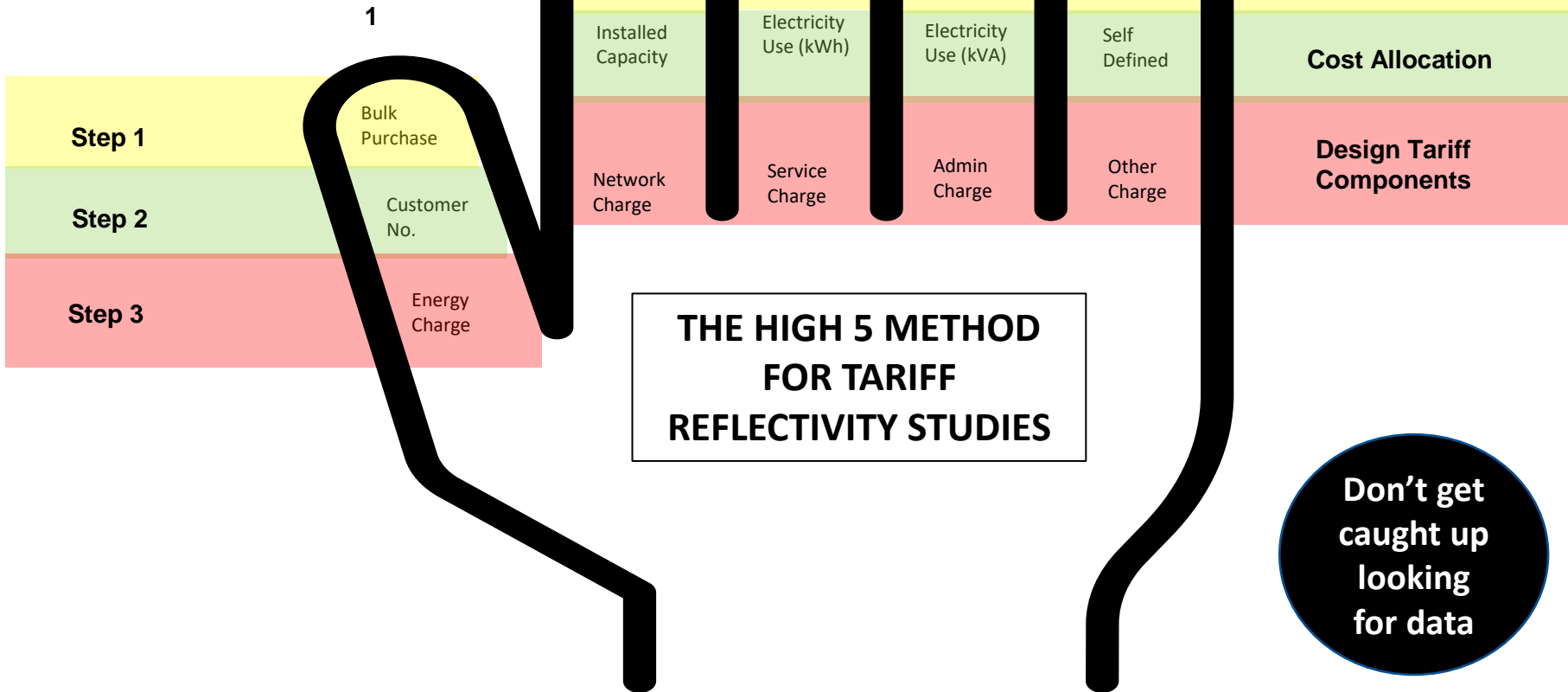


MY METHOD FOR REFLECTIVITY

	1	2	3	4	5
① Identify Costs	① Bulk Purchases	SALARIES	Repairs	Capital	other
② Allocation Method	① Customer Number	Installed Capacity	Elec kva Usage kwh	Elec Usage (kva)	Self data
③ TARIFF Components	③ Energy Charge	Network Charge	Service charge	Admin Charge	Subsidy Charge

3 x 5 MATRIX METHODOLOGY

**80 / 20
RULE**

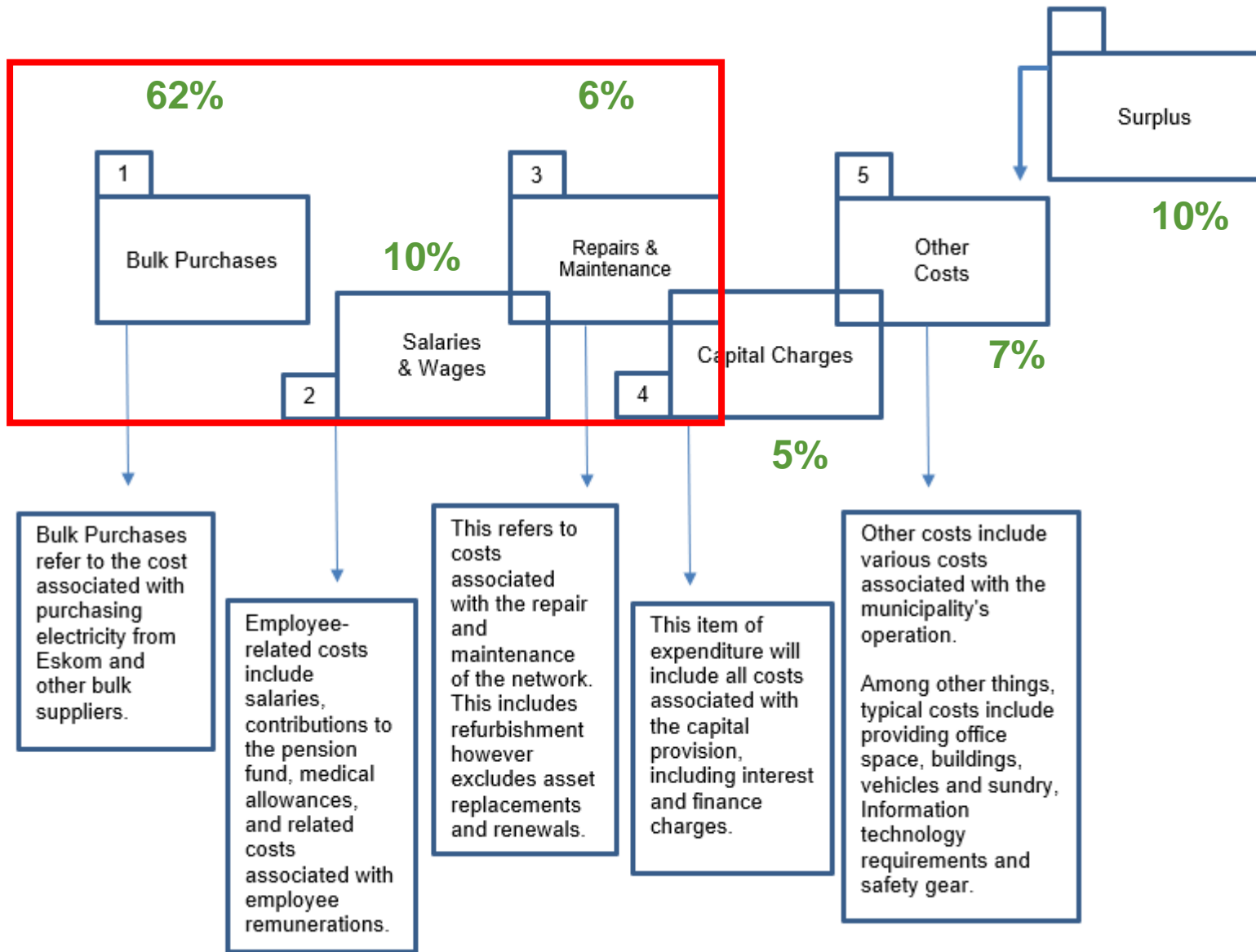


Don't get caught up looking for data

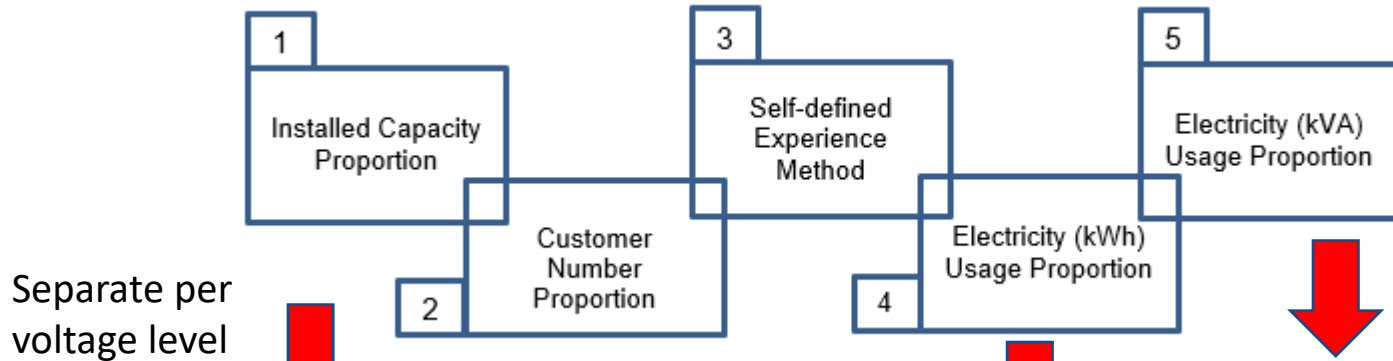
"Everything should be made as simple as possible, but no simpler"



COST IDENTIFICATION

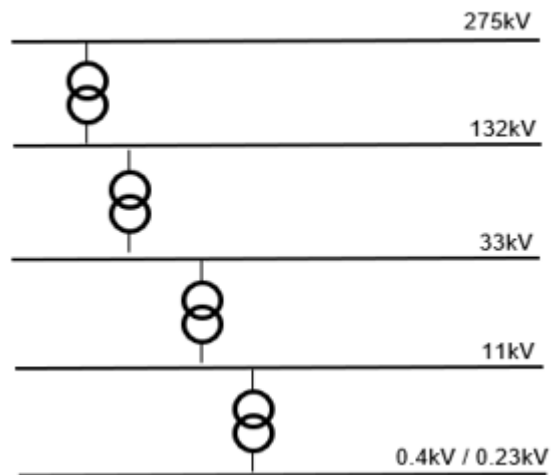


COST ALLOCATION

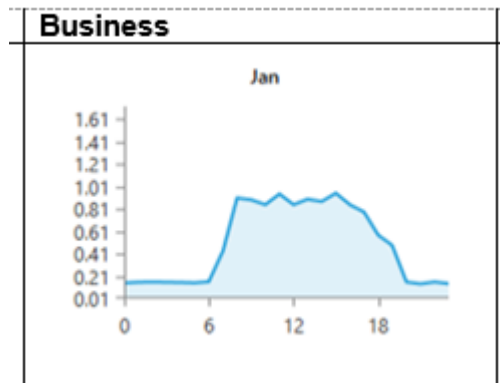
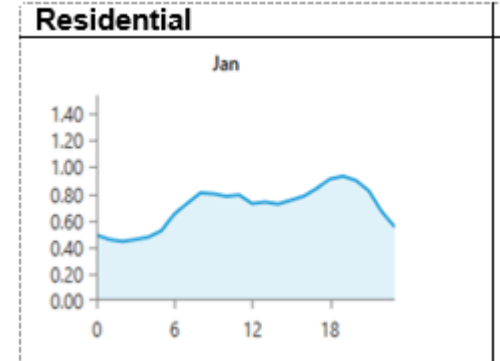
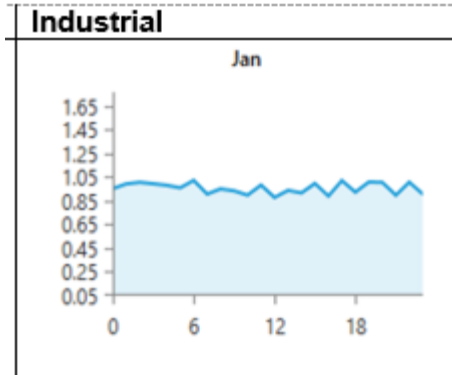


Separate per voltage level

Reduced Network Diagram (RND)



Use standard load profiles



COST : STUDY RESULTS

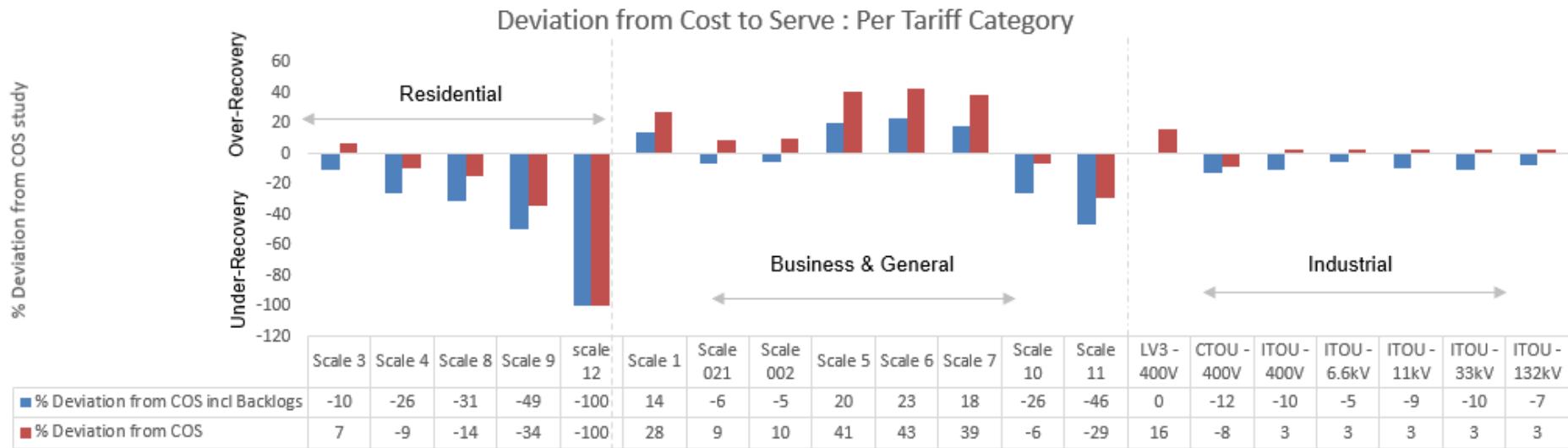


Figure 10 Deviation from COS: per tariff category

Total revenue recovered including backlog revenue

Total revenue recovered excluding backlog revenue

Considering a balanced budget per the NERSA guidelines, the municipality is recovering 97% of its revenue; however, revenue recovery is not reflective. Hence some tariff categories are paying more, and some are paying less.

However, the reality is that the municipality has backlogs that must be completed. Therefore, the cost of backlogs must be included in the cost to serve revenue requirements. With an estimate of R3bn for backlogs, the tariff categories further deviate from the initially calculated cost to serve. Including the backlogs, the total revenue recovered is only 84%. The 16% revenue shortfall requires a tariff increase of 27.7% to reach cost reflectivity.

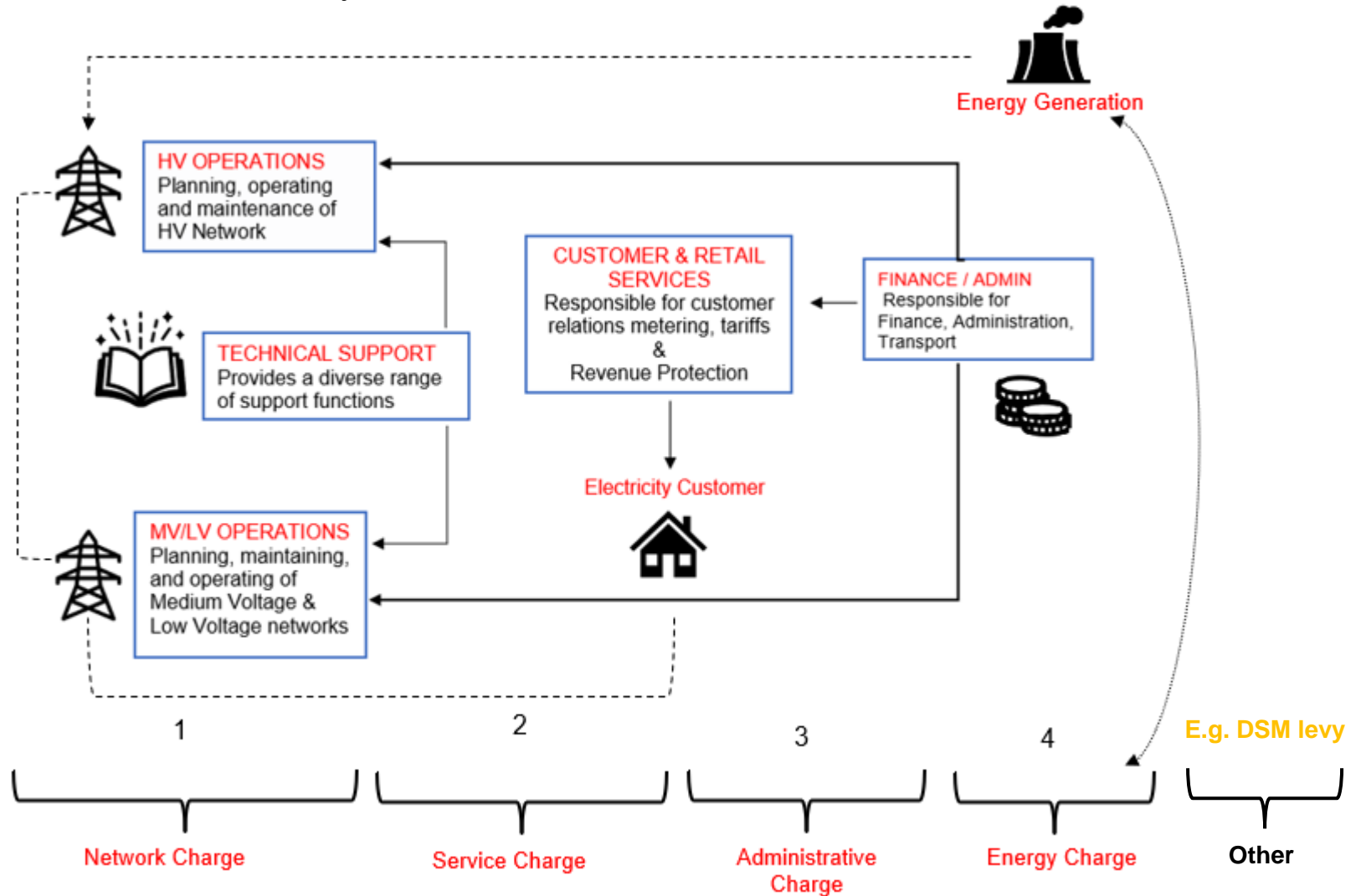


Pay attention to these...

- Only list electricity-related costs - RINGFENCE
- List all your costs, including backlogs. **PRUDENT** – Benchmark methodology is based on last year's costs. Without listing backlogs, there will be an under-recovery. ***
- Work on your assets register – you must know the value to depreciate it correctly.
- The asset value will also enable a proper return on assets. Currently, municipalities calculate a return on turnover. Prepare for the move to best practice.

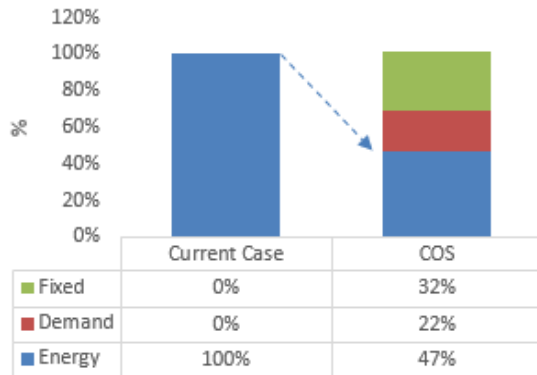
DESIGN TARIFF COMPONENTS

There are a variety of input costs that are responsible for the successful operation of the municipality. Designing a tariff with all input costs as tariff components would be unreasonable. Use major cost causation drivers.



STRUCTURE : STUDY RESULTS

Residential Category – Scale 3,4,8,9



*Rounded Off

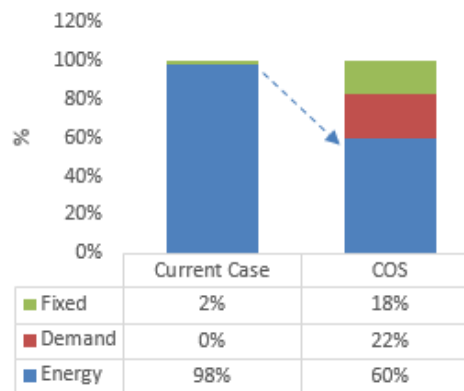
Figure 11 Residential tariff structure: Current vs CTS

The current residential tariffs are single-rate energy tariffs only; therefore, the energy rates reflect 100% of the current cost recovery. However, in the CTS study, the energy rate should be recovering 47% of the revenue, a demand charge should recover 22% of the revenue, and a fixed charge should recover 32% of the revenue.

With the current tariff structure, the municipality is at significant risk of an under-recovery should the customer reduce energy consumption through adopting energy efficiency measures or alternate generation [11].

Many of the prepaid customers are procuring electricity via prepaid meters. Therefore, implementing fixed and demand charges would significantly complicate the purchasing mechanism.

Business Category – Scale 1



*Rounded Off

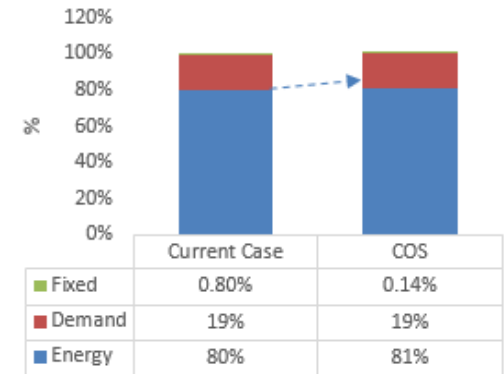
Figure 12 Business tariff structure: Current vs CTS

The business tariffs (Scale 1) are single-rate energy tariffs and a service charge. Currently, 98% of the costs are recovered via the energy charges, whilst the CTS indicates an optimum recovery of 60% through energy charges.

While a fixed charge is present, it only caters for 2% of the allocated revenue, while the CTS indicates an optimum recovery level of 18%. A demand charge should be priced to recover 22% of the costs; however, currently, there are no demand charges within the tariff structure.

With the current tariff structure, the municipality is at significant risk of an under-recovery should the customer reduce energy consumption by adopting energy efficiency measures or alternate generation [11].

Industrial Category – ITOU



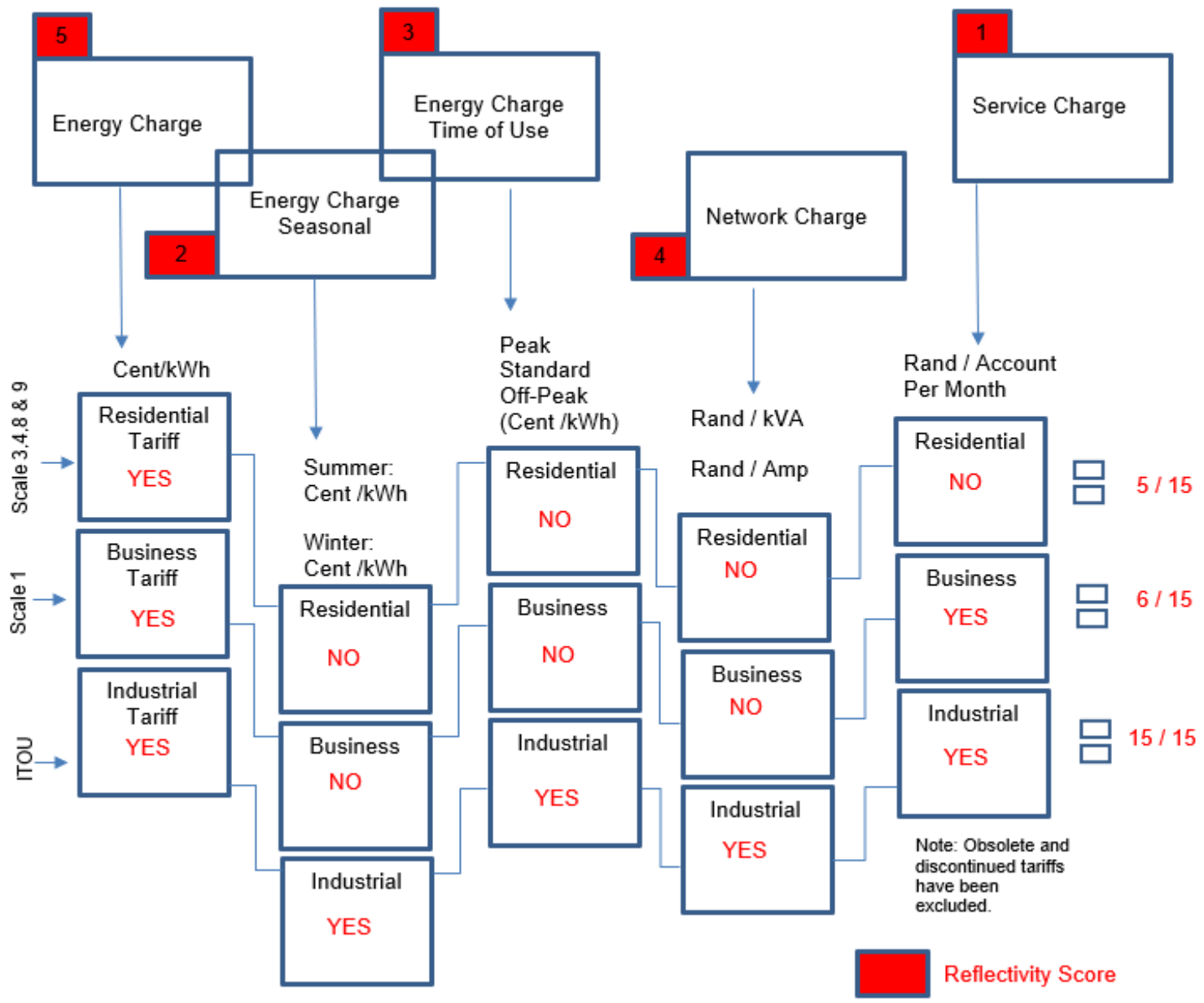
*Rounded Off

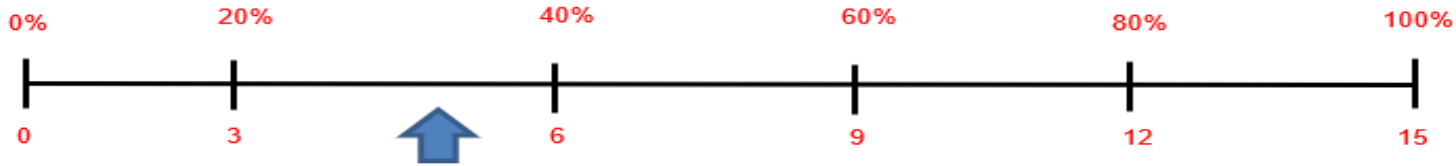
Figure 13 Industrial tariff structure: Current vs CTS

The Industrial tariff structure is well balanced and aligns with the CTS study. The optimum energy recovery ratio, as per the study, is 80%, and in reality, it is 81%. The optimum demand is 19%, and the current tariff meets that requirement. The fixed component currently recovers 0.8% of the total costs; however, as per the CTS calculations, the optimum indicates a level of 0.14%.

With the current tariff structure, the municipality's risk of an under-recovery should the customer reduce energy demand through adopted energy efficiency measures or alternate generation is limited.

STRUCTURAL REFLECTIVITY SCORE





Currently, the residential sector is only 33% structurally reflective. The low reflectiveness is not ideal or sustainable. As electricity consumption drops, revenue will also decline.

Introducing seasonality tariffs for the residential sector will improve price reflectivity and allow for passing on the higher winter pricing signal.

The Introduction of time-based tariffs will significantly enhance price reflectivity. However, specialised metering and communication will be required.

Introducing a network charge, service charge, and administration charge will significantly improve the structural reflectivity of the residential tariff.

Making the transition to introduce fixed charges will start to place a burden on low-consumption customers. Invariably this would interfere with the subsidisation mechanism within the tariff.

Before implementing fixed charges, careful consideration must be given to social, economic, political and affordability whilst balancing the need to move to price reflectivity.

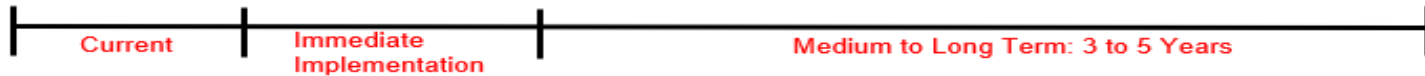


Table 2 Impact of COS tariffs on residential customer bills

The existing tariff is a flat rate tariff of 209 c/kWh.

The reflective tariff is calculated with a fixed charge of R 363 p/m, a network charge of R 237/ kVA / pm and a reduced energy charge of 105 c/kWh.

Low-consumption users will be severely impacted during the move to cost-reflective tariffs. Moving to CTS tariffs results in low-consumption customers not enjoying the subsidies provided by the higher-consumption customers.

Unless there is an alternate form of subsidisation, low-consumption customers will bear the brunt of migrating to CTS-aligned tariffs.

kWh Use	Existing Bill	Bill after implementing cost to serve	Increase	% of customers
100	R 224	R 1,653	638%	62%
200	R 448	R 1,758	292%	
300	R 672	R 1,863	177%	
400	R 896	R 1,968	120%	
500	R 1,120	R 2,073	85%	24%
600	R 1,344	R 2,178	62%	
700	R 1,568	R 2,283	46%	
800	R 1,792	R 2,388	33%	
900	R 2,016	R 2,493	24%	Customers consuming greater than 800kWh per month account for only 14 %
1000	R 2,240	R 2,598	16%	
1200	R 2,688	R 2,808	4%	
1400	R 3,136	R 3,018	-4%	
1600	R 3,584	R 3,228	-10%	
1800	R 4,032	R 3,438	-15%	



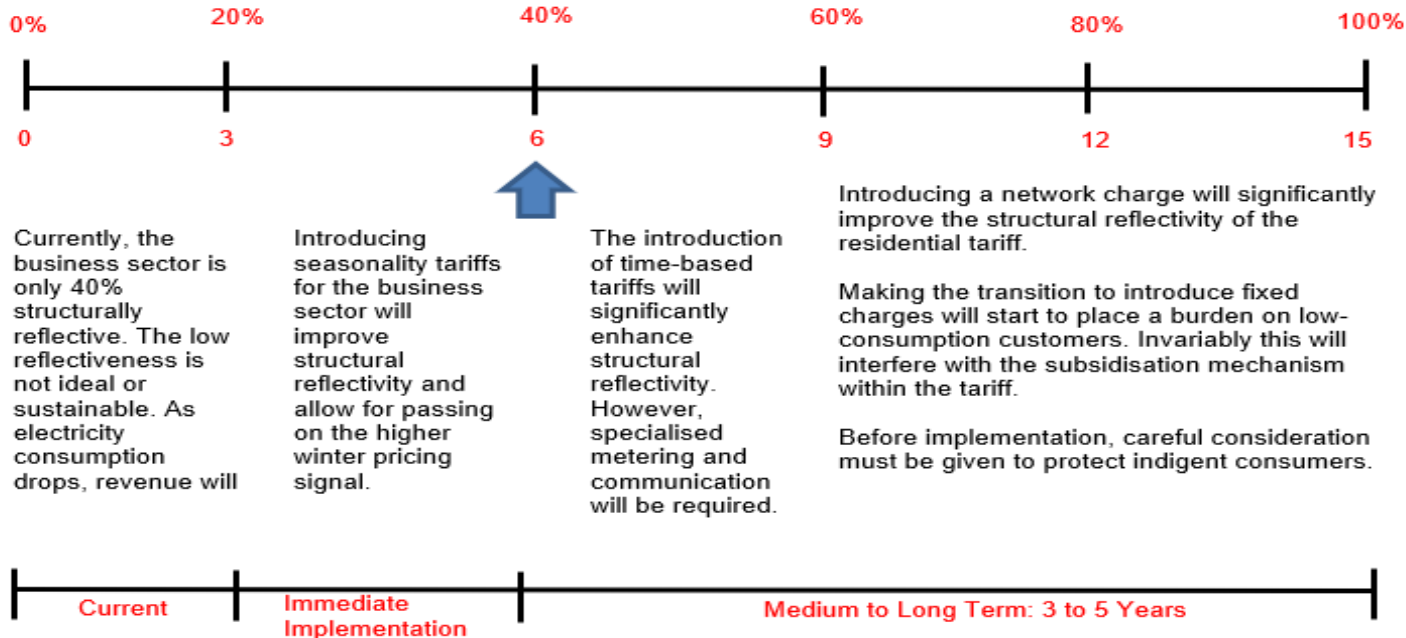


Table 3 Impact of CTS tariffs on business customer bills

The existing tariff is a flat rate tariff of 236 c/kWh and a service charge of R 308 p/m.

The reflective tariff is calculated with a fixed charge of R 869 p/m, a network charge of R 365 / kVA / pm and a reduced energy charge of 160 c/kWh.

Low-consumption users will be severely impacted during the move to cost-reflective tariffs. Moving to CTS tariffs results in low-consumption customers not enjoying the subsidies provided by the higher-consumption customers.

Unless there is an alternate form of subsidisation, low-consumption customers will bear the brunt of migrating to CTS-aligned tariffs.

kWh Use	Existing Bill	Bill after implementing cost to serve	Increase	% of customers
100	R 262	R 2,854	989%	80%
200	R 524	R 3,014	475%	
300	R 786	R 3,174	304%	
400	R 1,048	R 3,334	218%	
500	R 1,310	R 3,494	167%	
600	R 1,572	R 3,654	132%	
700	R 1,834	R 3,814	108%	
800	R 2,096	R 3,974	90%	
900	R 2,358	R 4,134	75%	
1000	R 2,620	R 4,294	64%	
s1200	R 3,144	R 4,614	47%	
1400	R 3,668	R 4,934	35%	
1600	R 4,192	R 5,254	25%	
5500	R 14,410	R 11,494	-20%	

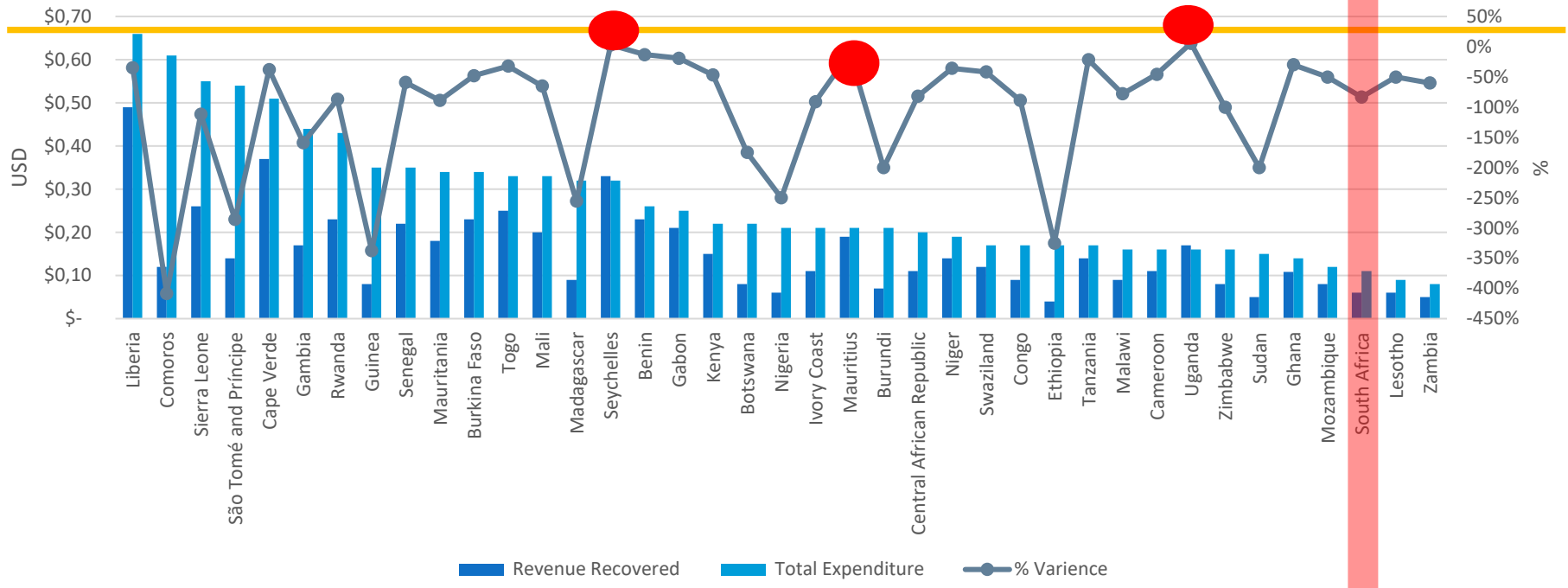
Cost reflectivity in Africa

Why such a poor rate of reflectivity?

COST REFLECTIVE
TRANSITION

RENEWABLE ENERGY
SHADOW PRICING

Revenue Recovered Vs Expenses Per kWh - Yr : 2014 WORLD BANK STUDY



Is cost reflectivity necessary?

Y N

Is cost reflectivity realistic & affordable?

Y N

Are all customers in South Africa ready for reflectivity?

Y N



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Thank you

